E 21 200 E

SYNTHESIS

International Journal of Methods in Synthetic Organic Chemistry

Georg Thieme Publishers Stuttgart

Index 1979

EASTERN MICHIGAN UNIVERSITY
LIBRARY
29 AUG 1980
SCIENCE & TECHNOLOGY

INTERNATIONAL JOURNAL OF METHODS
IN SYNTHETIC ORGANIC CHEMISTRY

1979

SYNTHESIS

REVIEWS · COMMUNICATIONS · ABSTRACTS

EDITORS

G. SCHILL, Freiburg/Br.

G. SOSNOVSKY, Milwaukee/Wis.

H. J. ZIEGLER, Basel

ADVISORY BOARD

D. H. R. BARTON, Gif-sur-Yvette
K. BERNAUER, Basel
H. C. BROWN, Lafayette/Ind.
E. J. COREY, Cambridge/Mass.
H. HELLMANN, Marl
W. S. JOHNSON, Stanford/Calif.
M. I. KABACHNIK, Moscow
J. MATHIEU, Romainville
W. P. NEUMANN, Dortmund
R. ODA, Kyoto
G. A. OLAH, Los Angeles/Calif.
E. G. ROZANTSEV, Moscow
H. E. SIMMONS, Wilmington/Del.
F. SONDHEIMER, London
F. ŠORM, Prague
H. A. STAAB, Heidelberg
E. E. VAN TAMELEN, Stanford/Calif.
K. WEISSERMEL, Frankfurt/Main
R. WEST, Madison/Wis.
G. WILKE, Mülheim/Ruhr

EDITORIAL OFFICE

R. E. DUNMUR, W. LÜRKEN
P. O. Box 732 · Herdweg 63 · D-7000 Stuttgart 1
Phone 07 11/20 47 209 · Telex 7 21 942
Cable address: Thiemebuch Stuttgart

GEORG THIEME VERLAG · STUTTGART

© 1980 Georg Thieme Verlag, Stuttgart, Herdweg 63 – Printed in Germany – Druck: Zechnersche Buchdruckerei, Speyer.

SYNTHESIS 1979

Subject Index 1001
Errata and Addenda 1035
Authors' Guidelines 1037

Reviews

Belin, B., see Blažević, N. 161

Blažević, N., Kolbah, D., Belin, B., Šunjić, V., Kajfež, F.: Hexamethylenetetramine, A Versatile Reagent in Organic Synthesis 161

Chan, T.H., Fleming, I.: Electrophilic Substitution of Organosilicon Compounds – Applications to Organic Synthesis 761

Effenberger, F., see Häbich, D. 841

Fleming, I., see Chan, T.H. 761

Häbich, D., Effenberger, F.: Preparation of Aryl- and Heteroaryltrimethylsilanes 841

Ho, T.-L.: Reduction of Organic Compounds with Low-Valent Species of Group IVB, VB, and VIB Metals 1

Kajfež, F., see Blažević, N. 161

Kolbah, D., see Blažević, N. 161

Konovalova, I.V., see Pudovik, A.N. 81

Liebscher, J., Hartmann, H.: 3-Chloro-2-propeniminium-salze (vinyloge Amidchloride) als vorteilhafte Synthesebausteine der organischen Chemie 241

McKillop, A., Young, D.W.: Organic Synthesis Using Supported Reagents – Part I 402
Part II 481

Martin, S.F.: Synthesis of Aldehydes, Ketones, and Carboxylic Acids from Lower Carbonyl Compounds by C–C Coupling Reactions 633

Mathias, L.J.: Esterification and Alkylation Reactions Employing Isoureas 561

Pudovik, A.N., Konovalova, I.V.: Addition Reactions of Esters of Phosphorus(III) Acids with Unsaturated Systems 81

Shipchandler, M.T.: The Utility of Nitroacetic Acid and Its Esters in Organic Synthesis 666

Šunjić, V., see Blažević, N. 161

Tashiro, M.: Selective Synthesis of Aromatic Compounds Using Positional Protective Groups 921

Young, D.W., see McKillop, A. 401, 481

Communications

Adachi, M., see Sugasawa, T. 99
see Tamura, Y. 887

Adam, W., Arias Encarnacion, L.A.: Benzyl Enol Ethers via Decarboxylation of α-Benzyloxy-β-lactones Derived from the Lithium α-Benzyloxy-α-lithioacetate Synthon 388

Adam, W., Balci, M., Rivera, J.: A Convenient Synthesis of Homobenzoquinones 807

Adam, W., Eggelte, H.J., Rodriguez, A.: A Convenient Method for the Preparation of Bicyclic Ozonides Possessing the 2,3,7-Trioxabicyclo[2.2.1]heptane Structure 383

Adams, J.H., Lewis, J.R., Paul, J.G.: Preparation of Aryl Esters using Polyphosphate Ester 429

Ahlbrecht, H., Raab, W., Vonderheid, C.: Dehydrocyanation of α-Aminonitriles; A Versatile and Convenient Enamine and Dienamine Synthesis 127

Ahluwalia, V.K., Prakash, C., Singh, R.P.: A Facile Protecting Group for the Synthesis of 2-Oxo-2*H*,8*H*-benzo[1,2-*b*:5,4-*b'*]dipyrans 715

Aimo, G., Degani, I., Fochi, R.: New Route to Esters from 2-Substituted 1,3-Benzoxathiolium Tetrafluoroborates. An Effective Protection of Esters against Nucleophilic Attack 223

Akabori, S., Ohtomi, M.: Highly Selective *C*-Alkylation of Ambient Anions; Synthesis of 9-Alkyl-9-benzoylfluorene by Phase-Transfer Reaction . . 616

Akasaka, T., see Furukawa, N. 289

Akiba, K., Negishi Y., Inamoto, N.: A Facile General Synthesis of Dimethyl 1-Acyl-1,2-dihydroquinoline-2-phosphonates and 2-Acyl-1,2-dihydroisoquinoline-1-phosphonates 55

Akimoto, I., Suzuki, A.: Synthesis of 2-Alkylfurans via the Reaction of Iodine with the Ate-Complexes Obtained from 2-Furyllithium and Trialkylboranes 146

Akutagawa, K., see Furukawa, N. 289

Alexakis, A., Cahiez, G., Normant, J.F.: Vinyl-Copper Derivatives; X. Alkylation of (*Z*)-Dialkenylcuprates 826

Ali, H., see Shafiullah, D. 124

Alonso-Cires, L., see Barluenga, J. 962

Amato, J.S., Karady, S., Sletzinger, M., Weinstock, L.M.: A New Preparation of Chloromethyl Methyl Ether Free of Bis[chloromethyl] Ether . . 970

Amin, S.G., Glazer, R.D., Manhas, M.S.: A Convenient Method for the Synthesis of β-Lactams via 1-Methyl-2-halopyridinium Salts . . 210

Amin, S.G., see Bose, A.K. 543

Amitani, H., see Koizumi, T. 110

Anghelova, Y., see Ivanov, C. 732

Annunziata, R., Cinquini, M., Cozzi, F.: Stereospecific Synthesis of β-Sulfonyl Sulfoxides 535

Anteunis, M., see Tavernier, D. 613

Aoki, T., see Nagata, W. 365

Arai, Y., see Masuda, K. 470

Ardakani, M.A., Smalley, R.K., Smith, R.H.: A New Synthesis of 2-Aryl-3-chloro-2*H*-indazoles 308

Arentzen, R., van Boeckel, C.A.A., Van der Marel, G., Van Boom, J.H.: 2,2,2-Tribromoethyl 2-Chloro-4-*t*-butylphenyl Phosphorochloridate: A Convenient Phosphorylating Agent for the Synthesis of DNA-Fragments by the Phosphotriester Approach 137

Arias Encarnacion, L.A., see Adam, W. 388

Arndt, H.C., Carroll, S.A.: Synthesis of α-Alkoxy-, α-Aryloxy-, and α-Benzyloxyacetaldehydes 202

Arnold, D.R., see Maroulis, A.J. 819

Arvanaghi, M., see Olah, G.A. 720, 721, 984

Asensio, G., see Barluenga, J. 893, 962

Auricchio, S., De Pava, O.V., Vera, E.: On the Reported Reaction between Ketones and Nitriles; Formation of *N*-Acylenamines and 4*H*-1,3-Oxazines 116

Bach, R.D., Badger, R.C.: A Convenient Preparation of 1,3,5,7-Tetrachloroadamantane and 1,3,5,7-Tetradeuterioadamantane 529

Badger, R.C., see Bach, R.D. 529

Baiocchi, L., Bonanomi, M., Giannangeli, M., Picconi, G.: Aromatization of Aliphatic Compounds; IV. On the Aromatization of Some Dihydrobenzofuranones 434

Balci, M., see Adam, W. 807

Ballini, R., see Carotti, A. 56

Balme, G., Doutheau, A., Goré, J., Malacria, M.: Reaction of Lithio Derivatives of Allenes with Butadiene Monoxide 508

Baraldi, P.G., see Barco, A. 68

Barbe, J., see Galy, J.P. 944

Barco, A., Benetti, S., Pollini, G.P., Baraldi, P.G., Simoni, D., Vicentini, C.B.: Synthesis of 5-Hydroxy-2-oxotetrahydropyrroles 68

Barluenga, J., Alonso-Cires, L., Asensio, G.: Mercury(II) Oxide/Tetrafluoroboric Acid – A New Reagent in Organic Synthesis: A Convenient Diamination of Olefins 962

Barluenga, J., Campos, P.J., Garcia-Martín, J.C., Roy, M.A., Asensio, G.: Preparation and Thermal Decomposition of Monohaloalkylmercury(II) Compounds; A New Synthesis of Acetals 893

Barluenga, J., Nájera, C., Yus, M.: A Simple Synthesis of Substituted *N*-Arylpiperidines from 1,6-Heptadiene 896

Barluenga, J., Tomás, M., Fustero, S., Gotor, V.: Reaction of Diimines with Acetylenedicarboxylic Acid Esters. Synthesis of 2-Oxo-1,2-dihydropyridines 345

Barluenga, J., Tomás, M., Fustero, S., Gotor, V.: Reaction of Diimines with Carbonyl Compounds. Synthesis of Dihydropyrimidines 346

Barnick, J.W.F.K., van der Baan, J.L., Bickelhaupt, F.: A Convenient Direct Method for the Preparation of β-Keto-Acids 787

Barszczak, B., see Grynkiewicz, G. 364

Barton, D.H.R., Davies, S.G., Motherwell, W.B.: Chromium Hexacarbonyl Isomerisation of Ergosterol and Related Dienes 265

Barve, M.V., see Narasimhan, N.S. 906

Battistoni, P., Bruni, P., Fava, G.: A General Method for the Synthesis of 3-Phenyl-2*H*-1,4-benzoxazines and 3-Phenyl-2*H*-3,4-dihydro-1,4-benzoxazines 220

Batušić, M., see Tabaković, I. 590

Baum, K., Guest, A.M.: Michael Reaction of Methylenemalonates with Nitro Compounds . . 311

Belli, A., see Giordano, C. 801

Bemi, L., Thomas, M.T., Snieckus, V.: A Convenient Entry into 4-Substituted 4*H*-1,2-Diazepines 130

Benack, H., see Haake, M. 97

Benedict, D.R., Bianchi, T.A., Cate, L.A.: Synthesis of Simple Unsymmetrical Ethers from Alcohols and Alkyl Halides or Sulfates: The Potassium Hydroxide/Dimethyl Sulfoxide System 428

Benetti, S., see Barco, A. 68

Benhamou, M.C., Etemad-Moghadam, G., Speziale, V., Lattes, A.: Solvomercuration Reactions; XXI. Reductive Demercuration of Organomercury Compounds using Phase-Transfer Catalysis 891

Benoiton, N.L., see Chen, F.M.F. 230, 709

Berge, J.M., Roberts, S.M.: Recommended Work-up Procedure for Reductions Employing Tri-*n*-butyltin Hydride 471

Bertini, V., Lucchesini, F., De Munno, A.: 3-Vinyl-1,2,5-selenadiazole 979

Bešter, M., see Stanovnik, B. 194

Bestmann, H.J., Schlosser, W.: Reaktionen mit Phosphinalkylenen, XXXVII. Eine Synthesemöglichkeit für Arylmethylen- und Alkyliden-acetylmethylidentriphenylphosphorane 201

Bhagwat, S.P., see Narasimhan, N.S. 903

Bhatt, M.V., see Perumal, P.T. 205

Bianchi, T.A., see Benedict, D.R. 428

Bickelhaupt, F., see Barnick, J.W.F.K. 787

Biernacki, W., Gdula, A.: Modification of the Method of Julia for the Preparation of Homoallylic Bromides and Iodides 37

Bizzozero, N., Garanti, L., Zecchi, G.: Synthesis of 2-Substituted 4*H*-[1,2,4]Triazolo[5,1-*c*][1,4]-benzoxazines 909

Bocchi, V., Casnati, G., Dossena, A., Marchelli, R.: Esterification of Amino Acids and Dipeptides under Mild Conditions; Part I; via Phase-Transfer Catalysis 957

Bocchi, V., Casnati, G., Dossena, A., Marchelli, R.: Esterification of Amino Acids and Dipeptides under Mild Conditions; Part II: via Sodium Salts 961

Boduszek, B., Wieczorek, J.S.: A New Method for the Preparation of Pyridine-4-phosphonic Acids 452

Boduszek, B., Wieczorek, J.S.: Synthesis of 1-(4-Pyridyl)-1,2-dihydropyridine-2-phosphonates and their Derivatives 454

Boekelheide, V., see Ewing, G.D. 427

Böshagen, H., Geiger, W.: Reaktionen mit 3-Chloro-1,2-benzisothiazolium-chloriden. Synthese von 2-substituierten 3-Aminobenzo[*b*]thiophenen . . 442

Boland, W., Hansen, V., Jaenicke, L.: A Convenient Synthesis of (*Z*)- and (*E*)-3-(1-Alkenyl)-cyclopentenes 114

Bonanomi, M., see Baiocchi, L. 434

Bond, F.T., see Chamberlin, A.R. 44

Bondavalli, F., Schenone, P., Ranise, A.: The Reaction of Terpenoid Nitrimines with Secondary Amines; A New Route to Terpenoid Enamines 830

Bongini, A., Cardillo, G., Orena, M., Sandri, S.: A Simple and Practical Method for Tetrahydropyranylation of Alcohols and Phenols 618

Borg-Visse, F., Dawans, F., Maréchal, E.: Synthesis of 2-Chloromethyl- and 2-Phthalimidomethyl-1,3-butadienes 817

Bos, H.J.T., see Verboom, W. 296

Bose, A.K., Ram, B., Amin, S.G., Mukkavilli, L., Vincent, J.E., Manhas, M.S.: Non-Hazardous Synthesis of *N*-Unsubstituted *cis*-3-Amino-2-azetidinones 543

Brandsma, L., see Sukhai, R.S. 455, 971

Brassard, P., see Roberge, G. 148

Bredereck, H., see Maier, T. 690

Breitmaier, E., see Skötsch, C. 370, 449

Brèque, A., see Savignac, P. 832

Brown, H.C., Gundu Rao, C., Kulkarni, S.U.: A Convenient Conversion of Carboxylic Acids into Aldehydes 704

Brown, H.C., Hubbard, J.L., Smith, K.: Carbonylation of Organoboranes in the Presence of Potassium Triisopropoxyborohydride; A Superior Reagent for the Synthesis of Aldehydes or Primary Alcohols from Alkenes via Hydroboration-Carbonylation 701

Brown, H.C., Kulkarni, S.U., Gundu Rao, C.: Facile Oxidation of Trialkyl Borates to Aldehydes and Ketones with Pyridinium Chlorochromate. A Remarkable Oxidizability of Such Borate Esters as Compared to Acetates 702

Brown, H.C., see Molander, G.A. 104

Brown, J.M., see Murrer, B.A. 350

Bruni, P., see Battistoni, P. 220

Buina, N.A., see Zhdanov, R.I. 269

Burkhart, G., see Hoberg, H. 525

Burton, A., Hevesi, L., Dumont, W., Cravador, A., Krief, A.: Cleavage (Deprotection) of Seleno-acetals to Carbonyl Compounds; A Comparative Study 877

Burton, D.J., Flynn, R.M.: A Facile Synthesis of Trifluoromethane- and Pentafluorobenzene-phosphonates 615

Butula, I., Grgurić, D.: Synthese von 2,6-Bis[hydroxymethyl]-pyridin aus Tetronsäure 808

Cacchi, S., Caglioti, L., Cernia, E.: Polymer-Supported Bromine; A New Reagent for the α-Bromination of Ketones 64

Cacchi, S., La Torre, F., Misiti, D.: Oxidation of Alcohols with Tetra-*n*-butylammonium Chromate 356

Caglioti, L., Gasparrini, F., Misiti, D., Palmieri, G.: Carbonyl Regeneration from *p*-Toluenesulfonylhydrazones, *N*-Methyl-*N*-*p*-toluenesulfonylhydrazones, and 2,4-Dinitrophenylhydrazones 207

Caglioti, L., see Cacchi, S. 64

Cahiez, G., see Alexakis, A. 826

Cainelli, G., Manescalchi, F., Panunzio, M.: Polymer-Supported Reagents. Synthesis of *N,N'*-Dialkylureas, *N*-Alkylurethanes, and Thiocyanates from Alkyl Halides under Mild Conditions 141

Calcines, D., see Kamernitzky, A.V. 592

Calò, V., Lopez, L., Marchese, G., Pesce, G.: Organocuprate Induced S_N2'-Type Reactions of Allylic Ethers of Benzothiazole. A New, Selective Synthesis of (*E*)-Alkenols 885

Campagna, F., see Carotti, A. 56

Campbell, J.R., see Wolfe, S. 117

Campos, P.J., see Barluenga, J. 893

Camps, F., Coll, J., Messeguer, A., Pericás, M.A., Ricart, R.: Synthesis of 2,2-Dimethylchromans by Cyclodehydrohalogenation of Phenols and 1,3-Dichloro-3-methylbutane 126

Cardillo, G., see Bongini, A. 618

Carotti, A., Campagna, F., Ballini, R.: An Easy, High-Yield Conversion of Aldoximes to Nitriles 56

Carroll, S.A., see Arndt, H.C. 202

Carson, J.F.: The Preparation of 2,2,2-Trichloroethyl Esters of some L-Amino Acids 24

Casella, L., Gullotti, M., Pasini, A., Psaro, R.: A New Route to Substituted Prolines; The Reaction between *N*-Pyruvylideneglycinatocopper(II) and Acrylic Compounds 150

Casiraghi, G., Casnati, R., Sartori, G., Castellani, M.: Selectivity in Reactions between Metal Phenolates and Trichloroacetaldehyde; A Mild Synthesis of 2-(2,2,2-Trichloro-1-hydroxyethyl)-phenols 824

Casnati, G., see Bocchi, V. 957, 961

see Casiraghi, G. 824

Castro, B., see Chretien, F. 937

Cate, L.A., see Benedict, D.R. 428

Catellani, M., see Casiraghi, G. 824

Cernia, E., see Cacchi, S. 64

Chaloner, P.A., see Murrer, B.A. 350

Chamberlin, A.R., Bond, F.T.: Regiochemical Control in Alkenyllithium Generation from Arenesulfonylhydrazones 44

Chandrachood, P.S., see Narasimhan, N.S. 589

Chang, C.K., see Wang, C.-B. 548

Chantegrel, B., Gelin, S.: Synthesis of 4-Amino-5(or 3)-hydroxyalkyl-3(or 5)-methylpyrazole-derived Cyclic and Open-Chain Carbamates from α-Acetyltetronic and α-Acetylhomotetronic Acids 584

Chapman, T.M., see Simpson, J.M. 100

Charrier, C., see Savignac, P. 832

Chen, F.M.F., Benoiton, N.L.: A General Method for Formylating Sensitive Amino Acid Esters . . 709

Chen, F.M.F., Kuroda, K., Benoiton, N.L.: A Simple Preparation of 5-Oxo-4,5-dihydro-1,3-oxazoles (Oxazolones) 230

Chmielewski, M., see Jurczak, J. 41

Chretien, F., Castro, B., Gross, B.: ATDP Salts; 22. A Novel and Efficient Method for the Preparation of Glycosyl Azides via Aryloxy-tris[dimethylamino]phosphonium Salts 937

Christol, H., see Cristau, H.-J. 538

Cinquini, M., see Annunziata, R. 535

Citerio, L., Saccarello, M.L., Stradi, R.: Direct Synthesis of 3-Morpholino-2,3-dihydroindoles from Enamines and Aryl Azides 305

Citerio, L., Saccarello, M.L., Stradi, R.: 2-Imidazolines; Part I. An Improved Synthesis of 1-Aryl- and 1-Acyl-4,5-diamino-4,5-dihydroimidazoles 594

Claesson, A., see Olsson, L.-I. 743

Cohen, V.I.: Synthesis of 2,4-Disubstituted 1,3-Selenazoles 66

Coll, J., see Camps, F. 126

Conia, J.M., see Huet, F. 33

Contento, M., Savoia, D., Trombini, C., Umani-Ronchi, A.: Potassium-Graphite as Selective Reducing Agent for Activated Double Bond Systems . . . . . 30 (erratum: 1035)

Corbel, B., Paugam, J.-P.: An Improved Synthesis of 2-Alkynyl Sulfides 882

Cottier, L., Remy, G., Descotes, G.: Photochemical Synthesis of *O*-Vinyl Glycosides and their Transformation into *C*-Branched Sugars 711

Coudert, G., Guillaumet, G., Loubinoux, B.: A New Synthesis of 3,4-Dihydro-2*H*-1,4-benzoxazines using Solid-Liquid Phase-Transfer Catalysis 541

Couffignal, R., see Goasdoue, C. 954

Couquelet, J., see Payard, M. 889

Coyle, J.D., Newport, G.L.: Fused Imidazolidines, Hexahydropyrazines, and Hexahydro-1,4-diazepines 381

Cozzi, F., see Annunziata, R. 535

Cravador, A., see Burton, A. 877

Cristau, H.-J., Vors, J.-P., Christol, H.: Synthesis and (Thio)Acetalisation of 3-Oxoalkyltriphenylphosphonium Salts 538

Cugnon de Sevricourt, M., see Rault, S. 586

Dalla Croce, P., Del Buttero, P., Licandro, E., Maiorana, S.: Synthesis of Arylazomethylenetriphenylphosphoranes from Arylhydrazonoyl Chlorides (via Nitrilimines *in situ*) and Triphenylphosphine 299

D'Aloisio, R., see Venturello, C. 283, 790

Dauphin, G.: Vilsmeier Formylation of Limonene. A New Method for the Synthesis of α-Atlantone 799

Davidson, J.S.: A Preparation of 3-Amino-4,5-diaryl-1,2,4-triazoles . . . . . 359 (erratum: 1035)

Davies, D.I., Dowle, M.D., Kenyon, R.F.: Bromolactones from 2-Norbornene-5-*endo*-acetic Acid 990

Davies, S.G., see Barton, D.H.R. 265

Dawans, F., see Borg-Visse, F. 817

De Angelis, F., Grgurina, I., Nicoletti, R.: A Convenient Synthesis of Secondary Amines . . 70

De Buyck, L., see De Kimpe, N. 741

de Carvalho, H., see Mahajan, J.R. 518

Decodts, G., Dressaire, G., Langlois, Y.: Pyridines as Precursors of Conjugated Diene Pheromones 510

Degani, I., Fochi, R., Regondi, V.: The Phase-Transfer Synthesis of Unsymmetrical Dialkyl Sulfides via *O,S*-Dialkyl Dithiocarbonates 178

Degani, I., see Aimo, G. 223

Dehmlow, E.V., Lissel, M.: Anwendungen der Phasentransfer-Katalyse; 9. Neue phasentransfer-katalytische Herstellung von Alkenen aus Alkylhalogeniden 372

De Kimpe, N., Verhé, R., De Buyck, L., Schamp, N.: Synthesis of Tertiary α-Cyanoenamines (2-Dialkylamino-2-alkenenitriles) 741

Delaunay, J., see Lebouc, A. 610

Del Buttero, P., see Dalla Croce, P. 299

del Giudice, M.R., see Gatta, F. 718

Delmas, M., see Gorrichon, J.-P. 219

De Munno, A., see Bertini, V. 979

den Hartog, J.A.J., van Boom, J.H.: A Simple Synthesis of 3′-*O*-(4-Methoxytetrahydropyran-4-yl)-N^6-anisoyladenosine 599

De Noten, L.J., see Verboom, W. 296

De Pava, O.V., see Auricchio, S. 116

Descotes, G., see Cottier, L. 711

Deshayes, C., Gelin, S.: Synthesis of Some 3-Ethoxycarbonyl-2-methyl-4,5-dihydro-7*H*-pyrazolo[1,5-*c*][1,3]oxazines from 4-Ethoxycarbonyl-5(or 3)-(2-hydroxyalkyl)-3(or 5)-methylpyrazoles 440

Di Cesare, P., see Duchaussoy, P. 198

Di Cesare, P., Gross, B.: Chiral Crown Ether Synthesis by Catalysis in a Two-Phases System 458

Dieris, C.-G., Scharf, H.-D.: Eine neue Synthese des Bakterienfarbstoffs Indigoidin und seiner Tetra-*N*-alkyl-Derivate 948

Dietrich, B., see Schill, G. 695

Dillon, J., see Hassner, A. 689

Dodd, G.H., see Ioannou, P.V. 939

Dossena, A., see Bocchi, V. 957, 961

Doutheau, A., see Balme, G. 508

Dowle, M.D., see Davies, D.I. 990

Drabczyńska, A., see Eckstein, M. 581

Drabowicz, J., Midura, W., Mikołajczyk, M.: A Convenient Procedure for Oxidation of Sulphides to Sulphoxides by Bromine/Aqueous Potassium Hydrogen Carbonate Reagent in a Two Phase System. Synthesis of ^{18}O-Sulphoxides 39

Dressaire, G., see Decodts, G. 510

Duchaussoy, P., Di Cesare, P., Gross, B.: Synthesis of Sugars Containing the Dihalocyclopropane Moiety; A New Access to the Heptose Series . . 198

Dumont, W., see Burton, A. 877

Dyong, I., Hermann, R., von Kiedrowski, G.: Alkohol-Oxidationen in Gegenwart der 1,3-Dithian-Gruppe 526

Eckstein, M., Drabczyńska, A.: A New Method for the Anellation of 5-, 6-, and 7-Membered Rings containing Two N-Atoms at the 7,8-Position of the Xanthine System 581

Ege, G., Frey, H.O., Schuck, E.: Eine neue Synthese von 4-Dimethylamino-1,3-butadien-1,1-dicarbonitrilen und deren Cyclisierung zu 2-Amino-3-cyanopyridinen 376

Eggelte, H.J., see Adam, W. 383

Elguero, J., see Galy, J.P. 944

Erbea, R., see Giordano, C. 801

Espada Rios, I., see Garcia Martinez, A. 382

Etemad-Moghadam, G., see Benhamou, M.C. 891

Evstigneeva, R.P., see Mironov, A.F. 533

Ewing, G.D., Boekelheide, V.: Convenient Syntheses of Naphthocyclobutenes (1,2-Dihydrocyclobuta[*a*]- and -[*b*]naphthalenes) 427

Fadeeva, T.M., see Kamernitzky, A.V. 592

Faller, P., see Schaefer, M. 122

Farachi, C., see Santaniello, E. 617, 912

Fava, G., see Battistoni, P. 220

Fetyukhin, V.N., Vovk, M.V., Samarai, L.I.: Synthesis of *N,N'*-Bis[1-chloroalkyl]carbodiimides 738

Field, G.F., Zally, W.J.: *C*-Acylation of Nitromethane with Phenyl Esters to form α-Nitroketones 295

Filipek, S., see Jurczak, J. 41

Fisk, T.E., see Stang, P.J. 438

Fitton, A.O., Houghton, P.G., Suschitzky, H.: Reactions of Formylchromone Derivatives; 3. A Facile Synthesis of Fused Benzopyranobenzothiazepinones, -benzoxazepinones, and -benzodiazepinones 337

Flatt, S.J., Fleet, G.W.J., Taylor, B.J.: Diethyl Ether/Chromium Trioxide in the Oxidation of Alcohols to Carbonyl Compounds 815

Fleet, G.W.J., see Flatt, S.J. 815

Fleming, I., Paterson, I.: Allylsilanes in Organic Synthesis: A Method for the Introduction of Two Carbon Substituents in Place of Carbonyl Oxygen 446

Fleming, I., Paterson, I.: A Simple Synthesis of Carvone Using Silyl Enol Ethers 736

Flynn, R.M., see Burton, D.J. 615

Fochi, R., see Aimo, G. 223

see Degani, I. 178

Foucaud, A., see Texier-Boullet, F. 884

Franke, A., Frickel, F.-F., Schlecker, R., Thieme, P.C.: Synthese von *o*-Arylvinyl- und *o*-Heteroarylvinylphenolen 712

Frey, H.O., see Ege, G. 376

Frickel, F.-F., see Franke, A. 712

Friedlander, B.T., see Harpp, D.N. 181

Fritz, H., see Schill, G. 695

Fujimoto, Y., see Miura, H. 898

Fujita, T., Watanabe, S., Suga, K., Isobe, T., Miura, T.: A Convenient Preparation of Some Spirolactones from 3-Hydroxy Acids and Ethyl Vinyl Ether 910

Fujita, T., Watanabe, S., Suga, K., Nakayama, H.: The Reaction of Carboxylic Acids with Conjugated Olefins Using Sodium Naphthalenide in the Presence of *N,N,N',N'*-Tetramethylethylenediamine 310

Fukata, G., see Tashiro, M. 602, 988

Fukuda, H., Takeda, M., Sato, Y., Mitsunobu, O.: A Convenient Method for the Formation of 2-Oxo-1,6-dioxaspiroalkene Rings 368

Fung, A.P., see Olah, G.A. 59, 270, 536, 537

Furukawa, N., Akutagawa, K., Yoshimura, T., Akasaka, T., Oae, S.: A Modified Synthesis of Diaryl Sulfone Diimides 289

Fustero, S., see Barluenga, J. 345, 346

Futatsugi, T., see Hata, T. 189

Gajda, T., Koziara, A., Zawadzki, S., Zwierzak, A.: Phase-Transfer-Catalysed *N*-Alkylation of *N*-Substituted Formamides; An Alternative Procedure for the Ritter Reaction 549

Galli, C.: Acylation of Arenes and Heteroarenes with *in situ* Generated Acyl Trifluoroacetates . . 303

Galy, A.M., see Galy, J.P. 944

Galy, J.P., Elguero, J., Vincent, E.J., Galy, A.M., Barbe, J.: A Convenient Synthesis of *N*-Alkylacridanones Using Phase-Transfer Catalysis 944

Gammill, R.B.: A New and Efficient Synthesis of 3-Halogenated 4*H*-1-Benzopyran-4-ones 901

Garanti, L., Testoni, G., Zecchi, G.: Synthesis of 3-Unsubstituted and 3-Alkyl-Substituted 1*H*-1,2-Benzodiazepines 380

Garanti, L., see Bizzozero, N. 909

Garcia-Luna, A., see Olah, G.A. 227

Garcia-Martín, J.C., see Barluenga, J. 893

Garcia Martinez, A., Espada Rios, I., Teso Villar, E.: Herstellung von *gem*-Bis-triflaten 382

Garegg, P.J., Samuelsson, B.: One-step Conversion of vicinal Diols into Olefins, using a Novel Reagent System 469

Garegg, P.J., Samuelsson, B.: Conversion of Vicinal Diols into Olefins using Triphenylphosphine and Triiodoimidazole 813

Gaset, A., see Gorrichon, J.-P. 219

Gasparrini, F., see Caglioti, L. 207

Gatta, F., del Giudice, M.R., Settimj, G.: New Synthesis of 3-(Disubstituted-amino)-1,4-benzodiazepin-2-ones 718

Gaudemar, M., see Gaudemar-Bardone, F. 463

Gaudemar-Bardone, F., Gaudemar, M.: A Convenient Preparation and Utilization of Lithium Dialkylamides 463

Gdula, A., see Biernacki, W. 37

Gebbing, H., see Haake, M. 97, 98

Geiger, W., see Böshagen, H. 442

Gelin, S., see Chantegrel, B. 584

Gelin, S., see Deshayes, C. 440

Gelin, S., see Pollet, P. 977

Georgoulis, C., Paillasseur, E., Valery, J.M.: A Novel Facile Procedure for the Preparation of Vicinal Phenoxyiodoalkanes from Alkenes by means of Mercury(II) Sulfate and Iodine . . 67

Giannangeli, M., see Baiocchi, L. 434

Gilligan, W.H., Stafford, S.L.: *O*-Chlorocarbonylation of β-Nitroalcohols and 2,2,2-Trihaloethanols via *O*-Alkyl *S*-Ethyl Thiocarbonates 600

Giordano, C., Belli, A., Erbea, R., Panossian, S.: α-Thioamidoalkylation of Aldehydes. A General Route to 6*H*-1,3,5-Oxathiazines 801

Glazer, R.D., see Amin, S.G. 210

Goasdoue, C., Couffignal, R.: Synthesis of *N,N*-Dialkyl-3-oxoalkanamides . . . . . 954 (erratum: 1036)

Golding, B.T., see Ioannou, P.V. 939

Golfier, M., Milcent, R.: Reaction of Acylhydrazines with Phenyltrichloromethane; A Simple Synthesis of *N*-Acyl-phenylmethanehydrazonates and 1,3,4-Oxadiazoles 946

Goliński, J., Jończyk, A., Mąkosza, M.: Reactions of Organic Anions; XCIV. Catalytic Two-Phase Alkylation of Benzyl Sulfones and Sulfonamides . . . . . 461 (erratum: 1035)

Golubski, Z.E., Skrowaczewska, Z.: New Synthesis of Cyclic Esters of Phosphonic and Thiophosphonic Acids 21

Gompper, R., Schneider, C.S.: Neue Dialkylamino-allene, -thiophene und -pyrrole aus Vinamidinium-Salzen 213

Gompper, R., Schneider, C.S.: 2-Azavinamidinium-Salze und ihre Umwandlung in Dialkylamino-thiazole und -imidazole 215

Gompper, R., Sobotta, R.: Pyridazine und Pyrazole aus 1-Acyl-vinamidinium-Salzen und Enaminoketonen 385

Goré, J., see Balme, G. 508

Gorrichon, J.-P., Gaset, A., Delmas, M.: A One-Step Synthesis of 1,3-Dioxanes from Ketones and Paraformaldehyde with a Cation-Exchange Resin as Catalyst 219

Gotor, V., see Barluenga, J. 345, 346

Grandguillot, J.-C., Rouessac, F.: A New, Convenient Synthesis of 5,5-Dialkyl-2(5*H*)-furanones 607

Greiner, U., see Kantlehner, W. 339

Grgurić, D., see Butula, I. 808

Grgurina, I., see De Angelis, F. 70

Groebel, B.-T., Konz, E., Millauer, H., Pistorius, R.: Reaktionen mit *p*-Benzochinon-bis-dimethylacetal. Umsetzungen mit Nucleophilen zu substituierten Hydrochinon-dimethylethern 605

Gronowitz, S., Lidert, Z.: A Convenient Synthesis of *N*-Substituted *N*-Chloromethylcarboxamides 810

Gross, B., see Chretien, F. 937

see Di Cesare, P. 458

see Duchaussoy, P. 198

see Simon, P. 951

Grynkiewicz, G., Barszczak, B., Zamojski, A.: Synthesis of 6-Alkoxy-2,3-dihydro-6*H*-pyran-3-ones from the 6-Acyloxy Derivatives 364

Guest, A.M., see Baum, K. 311

Guillaumet, G., see Coudert, G. 541

Gullotti, M., see Casella, L. 150

Gundu Rao, C., see Brown, H.C. 702, 704

Gupta, B.G.B., see Olah, G.A. 36, 61, 273, 274

Gutbrod, H.-D., see Kantlehner, W. 975

Haake, M., Gebbing, H.: Alkoxy-aryl-dialkylamino-sulfonium Tetrafluoroborates from *N,N*-Dialkyl-sulfenamides 98

Haake, M., Gebbing, H., Benack, H.: A Simple Method for the Oxidation of Sulfenamides to Sulfinamides 97

Hall, S.S., see Ryan Zilenovski, J.S. 698

Halpern, M., see Willner, I. 177

Hamada, Y., see Harusawa, S. 716

Hamana, H., see Sugasawa, T. 99

Hanafusa, T., see Suzuki, H. 705

Hankovszky, H.O., Hideg, K., Lex, L., Tigyi, J.: Nitroxyls; IV. Synthesis of Spin-Labelled *N*-(4-Piperidinyloxycarbonyl)-imidazoles and 4-Piperidinyloxycarbonyl Azides and Their Reaction with Amino Acid Derivatives 530

Hansen, V., see Boland, W. 114

Harpp, D.N., Friedlander, B.T., Smith, R.A.: The Synthesis of Thiocyanates from Sulfenyl Chlorides and Trimethylsilyl Cyanide 181

Hart, H., Teuerstein, A.: Octamethylnaphthalene (Improved Synthesis) and Octamethylbiphenylene 693

Hartmann, H., see Liebscher, J. 241

Hartmann, W., see Scholz, K.-H. 579

Harusawa, S., Hamada, Y., Shioiri, T.: New Methods and Reagents in Organic Synthesis; 4. Reaction of Enamines with Diethyl Phosphorocyanidate 716

Hasselaar, M., see Verkruijsse, H.D. 292

Hassner, A., Dillon, J.: Cycloaddition of Dichloroketene to Acetylenes. A Synthesis of Cyclobutenones 689

Hata, T., Yamada, K., Futatsugi, T., Sekine, M.: Facile Synthesis of Unesterified Enol Phosphates 189

Heberlein, M., Kobayashi, S., Skrabal, P.: Synthese von 17, 18, 19,20-Tetrahydro- und 18,19-Dioxo-17,18,19,20-tetrahydrotribenzo-[*c,g,m*][1,2,5,6,9,12]hexaazacyclotetradecin ohne Anwendung des Metalltemplat-Effektes . . 545

Heikes, J.E., see Sprague, P.W. 297

Heilmann, S.M., see Rasmussen, J.K. 523

Heine, H.-G., see Scholz, K.-H. 579

Hermann, R., see Dyong, I. 526

Herrmann, K., Simchen, G.: Synthese von Acylcyaniden (α-Oxonitrilen) mit Cyanotrimethylsilan . . . . . 204 (erratum: 552)

Heumann, A.: Bridgehead Substitution. Facile Replacement of Bromine in 1-Bromobicyclo-[3.3.1]nonan-3-one 53

Hevesi, L., see Burton, A. 877

Heydt, H., see Regitz, M. 805

Hideg, K., see Hankovszky, H.O. 530

Higashi, F., see Yamazaki, N. 355

Hilboll, G., see Stetter, H. 187

Hiroi, K., Matsuda, Y., Sato, S.: Direct Synthesis of 4-Phenylthio-1,3-dicarbonyl Compounds by Regioselective Sulfenylation of Dimetallated Derivatives 621

Hoberg, H., Burkhart, G.: Nickel(0)-katalysierte [2+2+2]-Cycloaddition von Alkynen mit Carbodiimiden zu 2-Imino-1,2-dihydropyridinen 525

Hofmann, K., Simchen, G.: Zur Sulfosilylierung von Carbonyl-Verbindungen und einer einfachen Synthese der Schwefeltrioxid-1,4-Dioxan- und -Pyridin-Addukte 699

Hojo, M., Masuda, R., Kosaka, S., Nagase, K.: A New Synthetic Route to 4-Alkyl-2*H*-1,4-thiazin-3-ones from 2-Methylthiazole 272

Hook, J.M., Mander, L.N., Urech, R.: Reductive Alkylation of 2,5-Dimethoxybenzoic Acid; A Direct Synthesis of Tetrahydrophenanthren-2-ones 374

Horak, V., see Svoronos, P. 596

Horvath, K., see Katritzky, A.R. 437

Hosoki, A., see Mataka, S. 524

Hosomi, A., see Sakurai, H. 740

Hosten, N., see Tavernier, D. 613

Hotta, K., see Kuo, H.S. 188

Houghton, P.G., see Fitton, A.O. 337

Hubbard, J.L., see Brown, H.C. 701

Hünig, S., Wehner, G.: Eine einfache und ergiebige Synthese von Trimethylsilyl-cyanid 522

Huet, F., Pellet, M., Conia, J.M.: Preparation of Acetals of Substituted Glyoxylic Esters (Methyl 2,2-Dimethoxyalkanoates) 33

Husstedt, U., Schäfer, H.J.: Selective Monoprotection of the Less Alkylated Double Bond in Dienes 964

Husstedt, U., Schäfer, H.J.: Selective Monoprotection of the Higher Alkylated Double Bond in Dienes by Bromination 966

Hutchins, R.O., Natale, N.R.: Reductions of Heterocyclic Systems; I. The Selective Reduction of 4-Substituted Pyridinium Salts with Cyanoborohydride 281

Ichihara, A., see Kimura, R. 516

Iida, H., see Takahashi, K. 301

Illi, V.O.: Phasentransfer-katalysierte *N*-Acylierung von Indol 387

Illi, V.O.: Phasentransfer-katalysierte *N*-Sulfonierung von Indol 136

Inamoto, N., see Akiba, K. 55

Inokawa, S., see Kojima, M. 147

Ioannou, P.V., Dodd, G.H., Golding, B.T.: Improved Synthesis of Saturated 1,2-Diacyl-*sn*-glycerols 939

Ipach, I., see Severin, T. 981

Ishii, H., see Miyoshi, N. 300

Isobe, T., see Fujita, T. 910

Itahara, T.: Intramolecular Ring Closure of 1-Aroylindoles by Palladium Acetate 151

Ito, H.: The Peptide Synthesis using *m*-Nitrophenyl Esters 465

Ito, K., see Yamashita, H. 531

Itoh, M., see Masuda, K. 470

Ivanov, C., Anghelova, Y., Spirova, S.: Condensation of the Ethyl Ester of 4-Methyl-2-oxo-2*H*-1-benzopyran-3-carboxylic Acid with Aldehydes and Ketones; Synthesis of 2-Substituted 4,5-Dioxo-1,2-dihydro-4*H*,5*H*-pyrano-[3,4-*c*][1]-benzopyrans 732

Iversen, T., Johansson, R.: Convenient Syntheses of Nitrophenyl β-D-Galactopyranosides and Nitrophenyl β-D-Glucopyranosides using Resin-bound Phenoxides 823

Jaenicke, L., see Boland, W. 114

Jedliński, Z., Kowalczuk, M.: A New Rearrangement of Formyloxiranes to β-Propiolactone Derivatives in the Presence of Trialkylaluminium or Aluminium Alkoxides 900

Jeganathan, S., Srinivasan, M.: Studies on Heterocyclic Compounds; I. Synthesis of Thiophene Derivatives of Protoberberine Alkaloids 195

Johansson, R., see Iversen, T. 823

Johnson, C., see Krow, G.R. 50

Jończyk, A., see Goliński, J. 461

Jung, F., Ladjama, D., Riehl, J.J.: Improved Preparation of 2-Alkenals from the Corresponding Saturated Aldehydes 507

Jurczak, J., Chmielewski, M., Filipek, S.: Organic Syntheses under High Pressure; I. High-Pressure Diels-Alder Reactions between 1-Methoxybuta-1,3-diene and Carbonyl Compounds 41

Jurczak, J., Tkacz, M.: Organic Synthesis under High Pressure; II. High-Pressure Diels-Alder Reactions with 2-Methoxy-5-oxo-5,6-dihydro-2*H*-pyran as Dienophile 42

Kaji, A., see Tanaka, K. 890

Kakinoki, H., see Yamazaki, N. 355

Kakisawa, H., see Kusumi, T. 221

Kambe, S., Saito, K., Kishi, H., Sakurai, A., Midorikawa, H.: A One-Step Synthesis of 4-Oxo-2-thioxopyrimidine Derivatives by the Ternary Condensation of Ethyl Cyanoacetate, Aldehydes, and Thiourea 287

Kamernitzky, A.V., Turuta, A.M., Fadeeva, T.M., Calcines, D.: Stereospecific *cis*-Opening of Steroidal α,β-Epiminoketones. A New Route to 20-Oxosteroids[16α,17α-*d*]-fused to 2,2-Dimethyl-1,3-oxazolidines, -1,3-thiazolidines, or -imidazolidines 592

Kantlehner, W., Greiner, U.: Tetraalkyl-cyanoformamidinium-Salze und Bis[dialkylamino]-malondinitrile aus Tetraalkylchloroformamidinium-Chloriden 339

Kantlehner, W., Gutbrod, H.-D.: Acetalisierungen unter Verwendung von Dimethylformamid-Dimethylsulfat-Addukt. Herstellung von 1,3-Dioxepanen und 4,7-Dihydro-1,3-dioxepinen 975

Kantlehner, W., Maier, T., Speh, P.: Tris-[dialkylamino]-methane und Tetraalkylformamidiniumthiocyanate aus Bis-[dialkylamino]-acetonitrilen 342

Kantlehner, W., Mergen, W.W.: Eine einfache Synthese für Tris-[dimethylamino]-ethoxymethan und Keten-aminale 343

Kantlehner, W., see Maier, T. 690

Kapitanova, N.G., see Zhdanov, R.I. 269

Kapp, D.C., see Simpson, J.M. 100

Karady, S., see Amato, J.S. 970

Kato, K., see Terao, S. 467

Katritzky, A.R., Horvath, K., Plau, B.: The Conversion of Primary Aliphatic Amines into Chlorides by Reaction with 2,4,6-Triphenylpyrylium Chloride 437

Kaulen, J., Schäfer, H.J.: Oxidation of Primary Alcohols to Carboxylic Acids at the Nickel Hydroxide Electrode 513

Kawasaki, T., see Tamura, Y. 120, 887

Kawenoki, I., see Kossanyi, J. 279

Keith, D.R., see Stowell, J.C. 132

Kent, S.B.H., see Tam, J.P. 955

Kenyon, R.F., see Davies, D.I. 990

Kermavner, V., see Stanovnik, B. 194

Keumi, T., see Olah, G.A. 112, 536

Kimura, R., Ichihara, A., Sakamura, S.: A Facile Synthesis of Methyl 2-Alkyl-2-alkenoates 516

Kimura, Y., see Mizuno, K. 688

King, A.O., see Negishi, E. 501

Kishi, H., see Kambe, S. 287

Kishi, K., see Ogura, K. 880

Kita, Y., see Tamura, Y. 120, 887

Kleijn, H., see Westmijze, H. 430, 432

Kloc, K., see Syper, L. 521

Kobayashi, S., see Heberlein, M. 545

Kočevar, M., see Stanovnik, B. 194

Kohlmeyer, I., see Skötsch, C. 449

Koizumi, T., Amitani, H., Yoshii, E.: A New Synthesis of Chiral Alkyl Methylphenylphosphinates 110

Kojima, M., Yamashita, M., Yoshida, H., Ogata, T., Inokawa, S.: Useful Method for the Preparation of α,β-Unsaturated Phosphonates (1-Methylenealkanephosphonates) 147

Konakahara, T., Takagi, Y.: Synthesis of Pyridine Derivatives from 2-(Trimethyl-silylmethyl)-pyridine 192

Kondo, K., Murata, K., Miyoshi, N., Murai, S., Sonoda, N.: Selenium-Catalyzed Synthesis of Urea Derivatives from Amino Acid Esters, Carbon Monoxide, and Oxygen 735

Kondo, K., Takarada, M., Murai, S., Sonoda, N.: Synthesis of Selenolcarbamates 597

Kondo, K., see Miyoshi, N. 300

Konz, E., Pistorius, R.: Reaktionen mit *p*-Benzochinon-bis-dimethylacetal. Hydrierungsprodukte 603

Konz, E., see Groebel, B.-T. 605

Koren, B., see Stanovnik, B. 194

Kosaka, S., see Hojo, M. 272

Kossanyi, J., Perales, J., Laachach, A., Kawenoki, I., Morizur, J.P.: Preparation of ω-Formylalkenoates from Cyclic β-Ketoesters . . 279

Kowalczuk, M., see Jedliński, Z. 900

Kozhich, D.T., see Mironov, A.F. 533

Koziara, A., Zawadzki, S., Zwierzak, A.: Phase-Transfer-Catalysed *N*-Alkylation of *N*-Substituted Carboxamides 527

Koziara, A., see Gajda, T. 549

Krief, A., see Burton, A. 877

Krishna Rao, G.S., see Venkama Naidu, M. . . 144, 708

Kristinsson, H.: Synthese von Heterocyclen; IV. Neuer Syntheseweg zur Herstellung von heterocyclischen Nitrilen 102

Krogh, J.A., see Sosnovsky, G. 228, 722

Krolikiewicz, K., see Vorbrüggen, H. 34, 35

Krow, G.R., Johnson, C.: Stereospecific Piperidine Synthesis via Regiospecific Baeyer-Villiger Oxidation 50

Kryshtal, G.V., Kulganek, V.V., Kucherov, V.F., Yanovskaya, L.A.: Phase-Transfer Catalysis of the Michael Addition to α,β-Unsaturated Aldehydes 107

Kubo, Y., see Tanaka, K. 890

Kucherov, V.F., see Kryshtal, G.V. 107

Kuhlmann, H., see Stetter, H. 29

Kukhar, V.P., see Lazukina, L.A. 747

Kulganek, V.V., see Kryshtal, G.V. 107

Kulkarni, S.U., see Brown, H.C. 702, 704

Kumar, P., Mukerjee, A.K.: Acylation of Primary Amines by *O*-Acyl Oximes 726

Kuo, H.S., Hotta, K., Yogo, M., Yoshina, S.: A Convenient Method for the Synthesis of Naphtho[2,3-*b*]furan-4,9-diones 188

Kuroda, K., see Chen, F.M.F. 230

Kusumi, T., Yoneda, K., Kakisawa, H.: A Convenient Synthesis of 5,6,7,8-Tetrahydroquinoline 221

Laachach, A., see Kossanyi, J. 279

Ladjama, D., Riehl, J.J.: A Convenient Preparation of Aldehyde Enol Acetates and Aldehyde Enol Trimethylsilyl Ethers 504

Ladjama, D., see Jung, F. 507

Laduree, D., see Rault, S. 586

Landini, D., Montanari, F., Rolla, F.: Synthesis of α-Aminoarylacetic Acids from Chloroform, Arylaldehydes, and Aqueous Ammonia under Two-Phase Conditions 26

Landini, D., Montanari, F., Rolla, F.: Selective Oxidation of Primary Alcohols to Aldehydes under Phase-Transfer Conditions 134

Langlois, Y., see Decodts, G. 510

Lapatsanis, L., see Paraskewas, S. 457

La Torre, F., see Cacchi, S. 356

Lattes, A., see Benhamou, M.C. 891

Lazukina, L.A., Kukhar, V.P.: Addition of Trimethylsilyl Cyanide to the C≡N Bond of Nitriles 747

Lebouc, A., Delaunay, J., Riobé, O.: New Synthesis of Dihydropyranylcarbinols, Dihydropyranyl Ketones, and 1-Dihydropyranylalkyl Carboxylates from Lithiated 3,4-Dihydro-2*H*-pyrans 610

Lee, D.G., see Srinivasan, N.S. 520

Lewis, J.R., see Adams, J.H. 429

Lex, L., see Hankovszky, H.O. 530

Licandro, E., see Dalla Croce, P. 299

Lidert, Z., see Gronowitz, S. 810

Lissel, M., see Dehmlow, E.V. 372

Löwer, H., see Schill, G. 695

Logemann, E., see Schill, G. 695

Lopez, L., see Calò, V. 885

Loubinoux, B., see Coudert, G. 541

Lucchesini, F., see Bertini, V. 979

McKean, D.R., see Miller, R.D. 730

Maeda, S., see Ozaki, Y. 216

Magolda, R.L., see Nicolaou, K.C. 982

Mahajan, J.R., de Carvalho, H.: Synthesis of 6-Alkyl-3,3-dimethyl-5-oxo-8,9-benzodecenolides by Intramolecular Reverse Dieckmann Reaction 518

Maier, T., Bredereck, H., Kantlehner, W.: Eine einfache Synthese für *s*-Triazin 690

Maier, T., see Kantlehner, W. 342

Maiorana, S., see Dalla Croce, P. 299

Mąkosza, M., see Goliński, J. 461

Malacria, M., see Balme, G. 508

Malhotra, R., see Olah, G.A. 58, 61

Mali, R.S., see Narasimhan, N.S. 906

Mander, L.N., Woolias, M.: A New Synthetic Equivalent to the Cyclohex-2-enone C-2-Carbanion 185

Mander, L.N., see Hook, J.M. 374

Manescalchi, F., Orena, M., Savoia, D.: Polymer-Supported Reagents. The Use of Anion-Exchange Resins in the Synthesis of Sulfones 445

Manescalchi, F., see Cainelli, G. 141

Manhas, M.S., see Amin, S.G. 210

see Bose, A.K. 543

Manzocchi, A., see Santaniello, E. 912

Marchelli, R., see Bocchi, V. 957, 961

Marchese, G., see Calò, V. 885

Marecek, J.F., see Ramirez, F. 71

Maréchal, E., see Borg-Visse, F. 817

Markovski, L.N., Romanenko, V.D., Ruban, A.V.: A General Method for the Synthesis of Phosphenodiimidic Amides 811

Maroulis, A.J., Arnold, D.R.: Radical Ions in Photochemistry; 11. The Photosensitized (Electron Transfer) Preparation of Some 2,2,2-Trifluoroethyl Ethers 819

Marquet, J., Moreno-Mañas, M.: Reactions of Bis[pentane-2,4-dionato]cobalt(II) with Alkyl Halides 348

Mastalerz, P., see Oleksyszyn, J. 985

Masuda, K., Arai, Y., Itoh, M.: A New Synthesis of 5-Alkylthio-1,2,3-triazoles. Thermal Rearrangement of 5-(*N*-Alkyl- and 5-(*N*-Allyl-*N*-alkoxycarbonyl)-amino-1,2,3-thiadiazoles 470

Masuda, R., see Hojo, M. 272

Mataka, S., Hosoki, A., Takahashi, K., Tashiro, M.: A Convenient Preparation of 3,4-Disubstituted 1,2,5-Thiadiazoles 524

Mataka, S., Takahashi, K., Tashiro, M.: A Convenient Preparation of [1,2,5]Oxa- and [1,2,5]Thiadiazolo[3,4-*c*]pyridines 687

Mathey, F., see Savignac, P. 832

Matsuda, Y., see Hiroi, K. 621

Matsumoto, K., Uchida, T., Paquette, L.A.: Synthesis of 3-Cyanoindolizines via Cycloaddition-Extrusion Reactions of Dicyanomethylids with Phenyl Vinyl Sulfoxide 746

Matsumoto, K., see Ozaki, Y. 216

Mattson, R.J., Sowell, Sr., J.W.: Selective *N*-1-Methylation of 2-Aminopyrroles with Sodium Hydride and Dimethyl Sulfate 217

Medici, A., see Rosini, G. 789

Meidar, D., see Olah, G.A. 270

Meijer, J., see Verboom, W. 47

see Westmijze, H. 432

Mergen, W.W., see Kantlehner, W. 343

Merrifield, R.B., see Tam, J.P. 955

Messeguer, A., see Camps, F. 126

Middlemiss, D.: A Convenient Synthesis of 4-Oxo-1,2,3,4,4a,9a-hexahydrofluorene and 4-Oxotetrahydrofluorenes 987

Midorikawa, H., see Kambe, S. 287

Midura, W., see Drabowicz, J. 39

Mignot, A., Moskowitz, H., Miocque, M.: Synthesis of [1,3]Thiazolo[3,2-*b*]-*s*-triazoles and [1,3]Thiazolo[2,3-*c*]-*s*-triazoles . 52 (erratum: 552)

Mikołajczyk, M., see Drabowicz, J. 39

Milcent, R., see Golfier, M. 946

Millauer, H., see Groebel, B.-T. 605

Miller, R.D., McKean, D.R.: The Facile Silylation of Aldehydes and Ketones using Trimethylsilyl Iodide; An Exceptionally Simple Procedure for the Generation of Thermodynamically Equilibrated Trimethylsilylenol Ethers 730

Miocque, M., see Mignot, A. 52

Mirek, J., see Sepiol, J. 290

Mironov, A.F., Kozhich, D.T., Vasilevsky, V.I., Evstigneeva, R.P.: A New, Convenient Synthesis of Pyrrolylacetylenes 533

Misiti, D., see Cacchi, S. 356

see Caglioti, L. 207

Mitamura, S., see Ogura, K. 880

Mitsunobu, O., see Fukuda, H. 368

Miura, H., Fujimoto, Y., Tatsuno, T.: Modification of α-Santonin; V. A Novel Lead(IV) Acetate Promoted Favorskii-type Rearrangement 898

Miura, T., see Fujita, T. 910

Miyoshi, M., see Ozaki, Y. 216

Miyoshi, N., Ishii, H., Kondo, K., Murai, S., Sonoda, N.: Convenient Syntheses of Phenyl Trimethylsilyl Selenide and Benzeneselenol 300

Miyoshi, N., see Kondo, K. 735

Mizuno, K., Kimura, Y., Otsuji, Y.: A Convenient Synthesis of Aryl Vinyl Ethers by Use of Tetra-*n*-butylammonium Hydrogen Sulfate 688

Młochowski, J., see Syper, L. 521

Molander, G.A., Brown, H.C.: Reaction of 9-(1-Alkynyl)-9-borabicyclo[3.3.1]nonanes with Isocyanates 104

Molines, H., see Wakselman, C. 622

Montanari, F., see Landini, D. 26, 134

Morck, H., see Seitz, G. 361

Moreno-Mañas, M., see Marquet, J. 348

Morita, T., Yoshida, S., Okamoto, Y., Sakurai, H.: Chlorotrimethylsilane/Sodium Iodide; A New Reagent for Conversion of Alcohols into Iodides 379

Morizur, J.P., see Kossanyi, J. 279

Moskal, A., see Moskal, J. 794

Moskal, J., Moskal, A.: Conjugated Schiff Bases; XI. A New Preparation of some 5,5-Disubstituted Hydantoins 794

Moskowitz, H., see Mignot, A. 52

Moss, R.A., Munjal, R.C.: Chlorovinylcarbenoid: Synthesis of *gem*-Chlorovinylcyclopropanes 425

Motherwell, W.B., see Barton, D.H.R. 265

Motoki, S., see Satsumabayashi, S. 184

Mukerjee, A.K., see Kumar, P. 726

Mukkavilli, L., see Bose, A.K. 543

Munjal, R.C., see Moss, R.A. 425

Murai, S., see Kondo, K. 597, 735

see Miyoshi, N. 300

Murata, K., see Kondo, K. 735

Murrer, B.A., Brown, J.M., Chaloner, P.A., Nicholson, P.N., Parker, D.: Synthesis of *trans*-4,5-Bis[diphenylarsinomethyl]-2,2-dimethyl-1,3-dioxolan and an Improved Preparation of its Phosphine Analogue (DIOP) 350

Murugesan, M., Soundararajan, N., Ramasamy, K., Shanmugam, P.: Pyrroloquinolines; Part II. Synthesis of 1*H*-Pyrrolo[2,3-*b*]quinolines 352

Nagase, K., see Hojo, M. 272

Nagata, W., Okada, K., Aoki, T.: *ortho*-Specific α-Hydroxyalkylation of Phenols with Aldehydes. An Efficient Synthesis of Saligenol Derivatives 365

Nájera, C., see Barluenga, J. 896

Nakayama, H., see Fujita, T. 310

Narang, S.C., see Olah, G.A. 58, 61, 273, 274

Narasimhan, N.S., Bhagwat, S.P.: Synthetic Applications of Lithiation Reactions; Part XII. Synthesis of Angular and Linear 2-Oxo-2*H*-pyranoquinolines 903

Narasimhan, N.S., Chandrachood, P.S.: Synthetic Application of Lithiation Reactions; X. Synthesis of Dibenzo[*b,f*][*1,4*]oxazepine, Dibenzo[*b,f*][1,4]thiazepine, and 5*H*-Dibenzo-[*b,e*][1,4]diazepine 589

Narasimhan, N.S., Mali, R.S., Barve, M.V.: Synthetic Application of Lithiation Reactions; Part XIII. Synthesis of 3-Phenylcoumarins and Their Benzo Derivatives 906

Natale, N.R., see Hutchins, R.O. 281

Nazaretian, V.P., see Volkov, N.D. 972

Negishi, E., Van Horn, D.E., King, A.O., Okukado, N.: A Selective Synthesis of (*E*)-2-Methyl-1-alkenyl Iodides via Zirconium-Catalyzed Carboalumination . . . 501 (addendum: 1035)

Negishi, Y., see Akiba, K. 55

Newport, G.L., see Coyle, J.D. 381

Nicholson, P.N., see Murrer, B.A. 350

Nicolaou, K.C., Magolda, R.L., Sipio, W.J.: Reaction of Phenylselenenyl Chloride with Enol Ethers and 1,2-Ethanediyl Acetyls. Synthesis of α-Phenylseleno-aldehydes and α-Phenylseleno-acetals 982

Nicoletti, R., see De Angelis, F. 70

Normant, J.F., see Alexakis, A. 826

see Villieras, J. 502, 968

Nuretdinov, I.A., see Zhdanov, R.I. 269

Oae, S., see Furukawa, N. 289

Ogata, T., see Kojima, M. 147

Ogura, K., Mitamura, S., Kishi, K., Tsuchihashi, G.: A New Synthesis of 2-Arylpropanoates Using Methyl Methylthiomethyl Sulfoxide 880

Ohtomi, M., see Akabori, S. 616

Okada, K., see Nagata, W. 365

Okamoto, Y., see Morita, T. 379

Okawara, M., see Ueno, Y. 182

Okukado, N., see Negishi, E. 501

Olah, G.A., Arvanaghi, M., Vankar, Y.D.: Synthetic Methods and Reactions; 70. Oxidation of Thiols to Disulfides with Bromodimethylsulfonium Bromide 721

Olah, G.A., Fung, A.P.: Synthetic Methods and Reactions; 67. One-Step Conversion of Alicyclic Ketones into Lactams with Hydroxylamine-*O*-sulfonic Acid/Formic Acid 537

Olah, G.A., Gupta, B.G.B., Narang, S.C.: Synthetic Methods and Reactions; 66. Nitrosonium Ion-Induced Preparation of Amides from Alkyl (arylalkyl) Halides with Nitriles, a Mild and Selective Ritter-Type Reaction 274

Olah, G.A., Keumi, T.: Synthetic Methods and Reactions; 60. Improved One-Step Conversion of Aldehydes into Nitriles with Hydroxylamine in Formic Acid Solution 112

Olah, G.A., Keumi, T., Fung, A.P.: Oxyfunctionalization of Hydrocarbons; 10. Hydroxylation of Benzene and Alkylbenzenes with 30 % Hydrogen Peroxide in Pyridinium Polyhydrogen Fluoride 536

Olah, G.A., Malhotra, R., Narang, S.C.: Synthetic Methods and Reactions; Part 56. Deoxygenation of Sulfoxides with Sodium Iodide/Oxalyl Chloride and Related Acid Halides 58

Olah, G.A., Meidar, D., Fung, A.P.: Synthetic Methods and Reactions; Part 59. Catalysis of Diels-Alder Reactions by Nafion-H Perfluorinated Resinsulfonic Acid 270

Olah, G.A., Narang, S.C., Gupta, B.G.B., Malhotra, R.: Synthetic Methods and Reactions; Part 58. Deoxygenation of Sulfoxides and Other Transformations with Chlorotrimethylsilane/Sodium Iodide and Related "Soft" Bases 61

Olah, G.A., Narang, S.C., Salem, G.F., Gupta, B.G.B.: Synthetic Methods and Reactions; 65. Mild Cleavage of Ethylenedithioacetals with Nitrosonium and Nitronium Salts 273

Olah, G.A., Vankar, Y.D., Arvanaghi, M.: Synthetic Methods and Reactions; 76. Deoxygenation of Sulfoxides with Sodium Iodide/Iodine/Trimethyl(ethyl)amine/Sulfur Dioxide or Sodium Iodide/Pyridine/Sulfur Trioxide Complexes 984

Olah, G.A., Vankar, Y.D., Arvanaghi, M., Surya Prakash, G.K.: Synthetic Methods and Reactions; 69. Dethioacetalization with Bromodimethylsulfonium Bromide 720

Olah, G.A., Vankar, Y.D., Fung, A.P.: Synthetic Methods and Reactions; 57. Reduction of α-Haloketones with Sodium Iodide/Trimethyl-(ethyl)amine/Sulfur Dioxide or Pyridine/Sulfur Trioxide Complexes 59

Olah, G.A., Vankar, Y.D., Garcia-Luna, A.: Synthetic Methods and Reactions; 64. Preparation of Nitriles from Amides and Aldoximes with Chlorosulfonyl Isocyanate, an Effective and Mild Dehydrating Agent 227

Olah, G.A., Vankar, Y.D., Gupta, B.G.B.: Synthetic Methods and Reactions; 55. Novel Conversion of Primary Aliphatic and Arylaliphatic Nitro Compounds into Nitriles with Trimethyl-(ethyl)amine/Sulfur Dioxide Complexes or Hexamethylphosphorous Triamide 36

Olah, G.A., Vankar, Y.D., Prakash, G.K.S.: Synthetic Methods and Reactions; 61. Oxidative Cleavage of Ketoximes and Tosylhydrazones with Aqueous Bromine 113

Oleksyszyn, J., Subotkowska, L., Mastalerz, P.: Diphenyl-1-Aminoalkanephosphonates 985

Olsson, L.-I., Claesson, A.: Synthesis of 2,5-Dihydrofurans and 5,6-Dihydro-2*H*-pyrans by Silver(I)-Catalyzed Cyclization of Allenic Alcohols 743

Ono, N., see Tanaka, K. 890

Orahovats, A.S., see Stoilova, V. 105

Orena, M., see Bongini, A. 618

see Manescalchi, F. 445

Orr, D.: A Convenient Synthesis of 2-Substituted Ethyl 4-Oxo-*trans*-2-alkenoates 139

Osowska, K., Zwierzak, A.: Diethyl *N*-Bromo-*N*-alkylphosphoramidates and Their Potential Preparative Utility 577

Otsuji, Y., see Mizuno, K. 688

Ozaki, Y., Maeda, S., Miyoshi, M., Matsumoto, K.: An Improved Stereoselective Synthesis of *threo*-β-Hydroxyamino Acids 216

Paillasseur, E., see Georgoulis, C. 67

Palmieri, G., see Caglioti, L. 207

Panossian, S., see Giordano, C. 801

Panunzio, M., see Cainelli, G. 141

Paquette, L.A., see Matsumoto, K. 746

Paraskewas, S., Lapatsanis, L.: Maleinsäure-monoamide aus Maleinsäure-anhydrid durch $PdCl_2$-katalysierte Reaktion mit primären Aminen 457

Parker, D., see Murrer, B.A. 350

Pasini, A., see Casella, L. 150

Paterson, I., see Fleming, I. 446, 736

Paugam, J.-P., see Corbel, B. 882

Paul, J.G., see Adams, J.H. 429

Payard, M., Couquelet, J.: A New and Facile Synthesis of 2-Hydromethylchromone and 2-Formylchromone 889

Pedersen, E.B.: A Facile Synthesis of Acaricide-Insecticide and Defoliant *N',N'*-Dimethyl-formamidines 546

Pellet, M., see Huet, F. 33

Perales, J., see Kossanyi, J. 279

Pericás, M.A., see Camps, F. 126

Perriot, P., see Villieras, J. 502, 968

Perumal, P.T., Bhatt, M.V.: A New Method for the Conversion of Halophenols and Halonaphthols to Quinones 205

Pesce, G., see Calò, V. 885

Peters, J.A.: Synthesis of Bicyclo[3.3.1]nonanes . . 321

Picconi, G., see Baiocchi, L. 434

Pistorius, R., see Groebel, B.-T. 605

see Konz, E. 603

Plau, B., see Katritzky, A.R. 437

Pollet, P., Gelin, S.: Tetronic Acids and Derivatives; Part VI. A Convenient Synthesis of New 4-Oxo-2-phenyl-2*H*-4,6-dihydro-furo[3,4-*d*]triazole and 4-Oxo-4,6-dihydro-furo[3,4-*c*]furan Systems . . . . .977 (erratum: 1036)

Pollini, G.P., see Barco, A. 68

Ponti, F., see Santaniello, E. 617

Porotikova, V.A., see Zhdanov, R.I. 267

Prakash, C., see Ahluwalia, V.K. 715

Prakash, G.K.S., see Olah, G.A. 113

Proll, T., see Walter, W. 941

Psaro, R., see Casella, L. 150

Raab, W., see Ahlbrecht, H. 127

Ram, B., see Bose, A.K. 543

Ramasamy, K., see Murugesan, M. 352

Ramirez, F., Marecek, J.F.: Preparative Chemistry of Organic Magnesium Oxyanion Complexes; 5. Aroxide Complexes 71

Ranise, A., see Bondavalli, F. 830

Rasmussen, J.K., Heilmann, S.M.: A Simple, Safe, and Inexpensive Preparation of Trimethylsilyl Cyanide 523

Rault, S., Cugnon de Sevricourt, M., Laduree, D., Robba, M.: Synthesis of [1]Benzofuro[3,2-*g*]pyrrolo[1,2-*a*]quinoxalines and Related Compounds 586

Regitz, M., Tawfik, A.M., Heydt, H.: Untersuchungen an Diazo-Verbindungen und Aziden; XXXIII. α-Diazocarbonyl-Verbindungen aus Acylmethylen-triphenylphosphoranen und 2-Azido-3-ethyl-1,3-benzothiazolium-tetrafluoroborat 805

Regondi, V., see Degani, I. 178

Remy, G., see Cottier, L. 711

Ricart, S., see Camps, F. 126

Richter, R., see Ulrich, H. 277

Riehl, J.J., see Jung, F. 507

see Ladjama, D. 504

Riobé, O., see Lebouc, A. 610

Rivera, J., see Adam, W. 807

Robba, M., see Rault, S. 586

Roberge, G., Brassard, P.: The Synthesis of Aloesaponarins I and II 148

Roberts, S.M., see Berge, J.M. 471

Rodriguez, A., see Adam, W. 383

Rolla, F., see Landini, D. 26, 134

Romanenko, V.D., see Markovski, L.N. 811

Rosini, G., Medici, A., Soverini, M.: Stereoselective, Mild Reduction of Tosylhydrazones with Sodium Cyanoborohydride in Acidic Media 789

Rosini, G., Salomoni, A., Squarcia, F.: A New, Convenient Preparation of *cis*-(±)2-Acetyl-1-methylcyclobutaneacetic Acid, a Key Intermediate in the Synthesis of (±)Grandisol 942

Rossi, R., Salvadori, P.A.: Synthesis of Both Enantiomers of 6-Methyl-3-octanone, a Component of the Alarm Pheromone of Ants in the Genus *Crematogaster* 209

Rouessac, F., see Grandguillot, J.-C. 607

Roy, M.A., see Barluenga, J. 893

Rozantsev, E.G., see Zhdanov, R.I. 267

Ruban, A.V., see Markovski, L.N. 811

Ryan Zilenovski, J.S., Hall, S.S.: A Convenient One-Pot Total Synthesis of (±)-β-Curcumene by a Consecutive Alkylation-Multistep Reduction Sequence 698

Saccarello, M.L., Stradi, R.: A New Synthesis of 1-Alkyl-3-aminoindoles 727

Saccarello, M.L., see Citerio, L. 305, 594

Saito, K., see Kambe, S. 287

Sakamura, S., see Kimura, R. 516

Sakurai, A., see Kambe, S. 287

Sakurai, H., Shirahata, A., Sasaki, K., Hosomi, A.: A Convenient Synthesis of Iodotrimethylsilane and its Use in the Preparation of Silylketenes 740

Sakurai, H., see Morita, T. 379

Salem, G.F., see Olah, G.A. 273

Salomoni, A., see Rosini, G. 942

Salvadori, P.A., see Rossi, R. 209

Samarai, L.I., see Fetyukhin, V.N. 738

Samuelsson, B., see Garegg, P.J. 469, 813

Sandhu, S.S., Tandon, S.S., Singh, H.: Synthesis of 3,8-Diaryl-2,5,6,7-tetrahydro-1,4,7-thiadiazonines and 3,9-Diaryl-5,6,7,8-tetrahydro-2*H*-1,4,8-thiadiazecines 46

Sandhu, S.S., Tandon, S.S., Singh, H.: Synthesis of 6,9a-Diaryl-1,2,3,4,9,9a-hexahydropyrimido-[2,1-*c*][1,4]thiazines; A Correction of the Structure of 3,9-Diaryl-5,6,7,8-tetrahydro-2*H*-1,4,8-thiadiazecines 623

Sandri, S., see Bongini, A. 618

Santaniello, E., Farachi, C., Manzocchi, A.: Reduction of Acid Chlorides to Hydroxy Compounds by Sodium Borohydride Adsorbed on Alumina 912

Santaniello, E., Farachi, C., Ponti, F.: *N*-Alkylation of Pyrrole and Indole Catalyzed by Crown Ethers 617

Sarnowski, R., see Zaidlewicz, M. 62

Sartori, G., see Casiraghi, G. 824

Sasaki, K., see Sakurai, H. 740

Sato, S., see Hiroi, K. 621

Sato, Y., see Fukuda, H. 368

Satsumabayashi, S., Motoki, S., Takahashi, H.: Convenient Syntheses of 2- and 5-Oxo-1,3-dithianes 184

Savignac, P., Brèque, A., Charrier, C., Mathey, F.: Synthesis of Dialkyl 2,3-Alkadienephosphonates by Reaction of the 1-Copper(I) Derivatives of Alkyl Alkanephosphonates with 2-Alkynyl Halides, 2-Alkynyl Benzenesulfonates, or 1-Bromoallenes 832

Savoia, D., see Contento, M. 30

see Manescalchi, F. 445

Schäfer, H.J., see Husstedt, U. 964, 966

see Kaulen, J. 513

Schaefer, M., Weber, J., Faller, P.: Stereospecific Robinson-Stork Anellation of Heteroaromatic *C*-Dialkylamino Compounds 122

Schamp, N., see De Kimpe, N. 741

Scharf, H.-D., see Dieris, C.-G. 948

Schenone, P., see Bondavalli, F. 830

Schill, G., Logemann, E., Dietrich, B., Löwer, H., Fritz, H.: Synthese und Hydrolyse von 3,6-Dialkyl-4,5-bis[dialkylamino]-1,2-benzochinonen 695

Schlecker, R., see Franke, A. 712

Schlosser, W., see Bestmann, H.J. 201

Schmidt, R.R., Speer, H.: Erzeugung und Reaktionen des α-Lithio-Derivatives von *trans*-Zimtsäurenitril 797

Schmiedel, R., see Seitz, G. 361

Schneider, C.S., see Gompper, R. 213, 215

Schneider, R., see Vilsmaier, E. 293

Scholz, K.-H., Heine, H.-G., Hartmann, W.: Eine ergiebige Synthese von 2-Oxo-4-imidazolin 579

Schuck, E., see Ege, G. 376

Seebach, D., Wykypiel, W.: Safe One-Pot Carbon-Carbon Bond Formation with Lithiated Nitrosamines Including Denitrosation by Sequential Reduction with Lithium Aluminium Hydride and Raney-Nickel 423

Seitz, G., Morck, H., Schmiedel, R., Sutrisno, R.: Eine einfache Synthese von Semiquadratsäureamiden 361

Sekine, M., see Hata, T. 189

Sekiya, M., see Yamashita, H. 531

Sepiol, J., Mirek, J.: Elimination of the Nitrile Group from Carbocyclic *o*-Hydroxynitriles 290

Settimj, G., see Gatta, F. 718

Severin, T., Ipach, I.: Synthese von 5-Acyl- und 5-Nitroazulenen 981

Shafiullah, D., Ali, H.: A Convenient Synthesis of Steroidal Nitrosoacetates and Nitroacetates 124

Shanmugam, P., see Murugesan, M. 352

Shioiri, T., see Harusawa, S. 716

Shirahata, A., see Sakurai, H. 740

Shiraishi, M., see Terao, S. 467

Simalty, M., see Skolimowski, J. 109

Simchen, G., see Herrmann, K. 204

see Hofmann, K. 699

Simon, P., Ziegler, J.-C., Gross, B.: Synthesis of Deoxy Sugars by Reaction of Glycosyloxyphosphonium Salts with Lithium Trialkylborohydrides 951

Simoni, D., see Barco, A. 68

Simpson, J.M., Kapp, D.C., Chapman, T.M.: The Preparation of *N*-Nitrosoamides Under Basic Conditions 100

Singh, J., see Sandhu, S.S. 46, 623

Singh, R.P., see Ahluwalia, V.K. 715

Sipio, W.J., see Nicolaou, K.G. 982

Skötsch, C., Breitmaier, E.: Ein neuer und einfacher Weg zu Isothiazolo[5,4-*b*]pyridinen 370

Skötsch, C., Kohlmeyer, I., Breitmaier, E.: Isoxazolo[5,4-*b*]pyridine aus 5-Aminoisoxazolen und 3-Ethoxyacroleinen . . . . . 449 (erratum: 1035)

Skolimowski, J., Simalty, M.: Organic Compounds of Phosphorus; XII. Ammonium Acetate/Acetic Acid, A Reagent for the Direct Heterocyclization of Bis- and Tris[1-alkynyl]-phosphine Oxides 109

Skrabal, P., see Heberlein, M. 545

Skrowaczewska, Z., see Golubski, Z.E. 21

Sletzinger, M., see Amato, J.S. 970

Ślusarska, E., see Zwierzak, A. 691

Smalley, R.K., see Ardakani, M.A. 308

Smith, K., see Brown, H.C. 701

Smith, R.A., see Harpp, D.N. 181

Smith, R.H., see Ardakani, M.A. 308

Snieckus, V., see Bemi, L. 130

Sobotta, R., see Gompper, R. 385

Soliman, F.S.G., see Soliman, R. 803

Soliman, R., Soliman, F.S.G.: A Facile Synthesis of 2,3-Disubstituted 4-Oxo-3,4-dihydroquinazolines 803

Sonoda, N., see Kondo, K. 597, 735

see Miyoshi, N. 300

Sopčič, M., see Zupančič, B.G. 123

Sosnovsky, G., Krogh, J.A.: The Synthesis of Sulfenamides Utilizing *N*-Alkylthio-, *N*-Cycloalkylthio-, and *N*-Arylthiolactams 228

Sosnovsky, G., Krogh, J.A., Umhoefer, S.G.: A One-Flask Conversion of Aldehydes to Nitriles Using Hydroxylamine Hydrochloride and Selenium Dioxide . . . . . 722 (erratum: 1036)

Soundararajan, N., see Murugesan, M. 352

Soverini, M., see Rosini, G. 789

Sowell, Sr., J.W., see Mattson, R.J. 217

Speer, H., see Schmidt, R.R. 797

Speh, P., see Kantlehner, W. 342

Speziale, V., see Benhamou, M.C. 891

Spirova, S., see Ivanov, C. 732

Sprague, P.W., Heikes, J.E.: Synthesis of Substituted 2-Imino-1,3-benzodithioles 297

Squarcia, F., see Rosini, G. 942

Srinivasan, M., see Jeganathan, S. 195

Srinivasan, N.S., Lee, D.G.: The Preparation of α-Hydroxy Ketones by Oxidation of Alkenes with Potassium Permanganate in Aqueous Acetone 520

Stafford, S.L., see Gilligan, W.H. 600

Stang, P.J., Fisk, T.E.: Synthesis of 1-(Ethynyl)-vinyl Trifluoromethanesulfonates 438

Stanovnik, B., Tišler, M., Kočevar, M., Koren, B., Bešter, M., Kermavner, V.: Reduction of Heterocyclic Diazo Compounds with Titanium(III) and Iron(II) Salts 194

Sterzycki, R.: Pyridinium Tosylate, A Mild Catalyst for Formation and Cleavage of Dioxolane-Type Acetals 724

Stetter, H., Hilboll, G.: Intramolekulare Aldol-Reaktion von δ,ε-ungesättigten γ-Diketonen . . 187

Stetter, H., Kuhlmann, H.: Eine einfache Herstellung von α-Alkylacrylsäureestern 29

Stoilova, V., Trifonov, L.S., Orahovats, A.S.: A Convenient One-Flask Synthesis of 1-Methylazetidines from 3-Aminoalkanols, Triphenylphosphine, and Carbon Tetrachloride 105

Stowell, J.C., Keith, D.R.: 2-(1,3-Dioxan-2-yl)-ethylidenetriphenylphosphorane, A New Three-Carbon Homologating Agent 132

Stradi, R., see Citerio, L. 305, 594

see Saccarello, M.L. 727

Subotkowska, L., see Oleksyszyn, J. 985

Suga, K., see Fujita, T. 310, 910

Sugasawa, T., Hamana, H., Toyoda, T., Adachi, M.: Aminohaloborane in Organic Synthesis; III. Specific *ortho*-Formylation of Secondary Anilines 99

Sukhai, R.S., Brandsma, L.: Efficient Method for the Preparation of Vinylthio- and Vinylselenosilanes 455

Sukhai, R.S., Brandsma, L.: A Convenient Method for the Preparation of Methyl Trithioperesters . . 971

Sukhai, R.S., see Verboom, W. 47

Surya Prakash, G.K., see Olah, G.A. 720

Suschitzky, H., see Fitton, A.O. 337

Sutrisno, R., see Seitz, G. 361

Suzuki, A., see Akimoto, I. 146

Suzuki, H., Usuki, M., Hanafusa, T.: A Photochemical Route to Some Substituted Benzyl Isoselenocyanates 705

Svoronos, P., Horak, V.: Sulfilimines from Sulfides using *p*-Toluenesulfonyl Azide and Thermal Copper Catalysis 596

Syper, L., Kloc, K., Mlochowski, J., Szulc, Z.: An Improved Synthesis of Benzo- and Naphthoquinones from Hydroquinone Dimethyl Ethers 521

Szabó, L., see Szabó-Pusztay, K. 276

Szabó-Pusztay, K., Szabó, L.: A Simple General Method for the Oxidation of Indoles to Oxindoles 276

Szeja, W.: Selective Benzoylation of Methyl 4,6-*O*-Benzylidene-α-D-galactopyranoside 821

Szeja, W.: Synthesis of Sulfonic Esters under Phase-Transfer Catalysed Conditions 822

Szulc, Z., see Syper, L. 521

Tabaković, I., Trkovnik, M., Batušić, M., Tabaković, K.: Electrochemical Synthesis of Heterocyclic Compounds; VII. Anodic Synthesis of 1,3-Thiazole Derivatives 590

Tabaković, K., see Tabaković, I. 590

Takagi, Y., see Konakahara, T. 192

Takahashi, H., see Satsumabayashi, S. 184

Takahashi, K., Iida, H.: A Convenient Synthesis of 2,3-Diphenyl-3-oxopropanamides 301

Takahashi, K., see Mataka, S. 524, 687

Takarada, M., see Kondo, K. 597

Takeda, M., see Fukuda, H. 368

Tam, J.P., Kent, S.B.H., Wong, T.W., Merrifield, R.B.: Improved Synthesis of 4-(Boc-aminoacyloxymethyl)-phenylacetic Acids for use in Solid-Phase Peptide Synthesis . . 955

Tamura, Y., Kawasaki, T., Adachi, M., Kita, Y.: Reaction of Grignard Reagents with the Combined Reagent Triphenylphosphine Thiocyanate; A Versatile Route to *N*-Unsubstituted Thioamides 887

Tamura, Y., Kawasaki, T., Tanio, M., Kita, Y.: A New Convenient Synthesis of 2-Thioxo-1,2-dihydroquinazolines 120

Tanaka, K., Ono, N., Kubo, Y., Kaji, A.: A New and Facile Synthesis of 2-Alkenenitriles from Carbonyl Compounds 890

Tandon, S.S., see Sandhu, S.S. 46, 623

Tanio, M., see Tamura, Y. 120

Tashiro, M., Fukata, G.: Studies on the Selective Preparation of Aromatic Compounds; 23. A New Preparation of 4-Piperidino- and 4-Morpholinophenols using the *t*-Butyl Function as a Positional Protective Group 602

Tashiro, M., Fukata, G., Yoshiya, H.: Studies on the Selective Preparation of Aromatic Compounds; 24. A New Preparative Route to 4-Alkoxyphenols 988

Tashiro, M., Yamato, T.: Studies on Selective Preparation of Aromatic Compounds; 21. A Convenient Preparation of Carbazole and 4-Methylcarbazole from Biphenyl Using *t*-Butyl Groups as Positional Protective Groups 48

Tashiro, M., see Mataka, S. 524, 687

Tatsuno, T., see Miura, H. 898

Tavernier, D., Hosten, N., Anteunis, M.: Synthesis of *cis*-1,2,3,4,4a,5,8,8a-Octahydronaphthalene and of *cis-transoid-cis*-1,4,4a,5,8,8a,9,9a,10,10a-Decahydroanthracene 613

Tawfik, A.M., see Regitz, M. 805

Taylor, B.J., see Flatt, S.J. 815

Terao, S., Shiraishi, M., Kato, K.: A Facile Synthesis of Allylic Alcohols 467

Teso Vilar, E., see Garcia Martinez, A. 382

Testoni, G., see Garanti, L. 380

Teuerstein, A., see Hart, H. 693

Texier-Boullet, F., Foucaud, A.: The Wittig Horner Reaction in Solid-Liquid Two-Phase Systems. . . . 884

Thieme, P.C., see Franke, A. 712

Thomas, M.T., see Bemi, L. 130

Tigyi, J., see Hankovszky, H.O. 530

Tišler, M., see Stanovnik, B. 194

Tkacz, M., see Jurczak, J. 42

Tomás, M., see Barluenga, J. 345, 346

Toyoda, T., see Sugasawa, T. 99

Trifonov, L.S., see Stoilova, V. 105

Trkovnik, M., see Tabaković, I. 590

Trombini, C., see Contento, M. 30

Tsuchihashi, G., see Ogura, K. 880

Tucker, B., see Ulrich, H. 277

Tundo, P., Venturello, P.: Gas-Phase Synthesis of Alkyl Iodides Promoted by Phase-Transfer Catalysts 952

Turuta, A.M., see Kamernitzky, A.V. 592

Uchida, T., see Matsumoto, K. 746

Ueno, Y., Okawara, M.: A Convenient Synthesis of 2-Dialkylamino-1,3-oxathiol-1-ylium Salts by an Unusual Cyclization of 2-Oxoalkyl Dithiocarbamates 182

Ugi, I., see Zahr, S. 266

Ulrich, H., Richter, R., Tucker, B.: Synthesis and Reactions of Isocyanatophenols and Isocyanatonaphthols 277

Umani-Ronchi, A., see Contento, M. 30

Umhoefer, S.G., see Sosnovsky, G. 722

Urech, R., see Hook, J.M. 374

Usuki, M., see Suzuki, H. 705

Uzarewicz, A., see Zaidlewicz, M. 62

Valery, J.M., see Georgoulis, C. 67

Van Boeckel, C.A.A., see Arentzen, R. 137

Van Boom, J.H., see Arentzen, R. 137

Van Boom, J.H., see den Hartog, J.A.J. 599

Van der Baan, J.L., see Barnick, J.W.F.K. 787

Van der Marel, G., see Arentzen, R. 137

Van Horn, D.E., see Negishi, E. 501

Vankar, Y.D., see Olah, G.A. 36, 59, 113, 227, 720, 721, 984

van Leusen, A.M., see Wildeman, J. 733

Vasilevsky, V.I., see Mironov, A.F. 533

Venkama Naidu, M., Krishna Rao, G.S.: Convenient Synthesis of *p*-Methoxyphenylcarbonyl Compounds and Desmethoxyencecalin using 2,3-Dichloro-5,6-dicyanobenzoquinone (DDQ) 144

Venkama Naidu, M., Krishna Rao, G.S.: Regioselectivity in the Vilsmeier Formylation of Chromenes. A Formylchromene Pathway for the Synthesis of some Aromatic Hemiterpenoids 708

Venturello, C., D'Aloisio, R.: 2-Arylazo-2,5-dimethyl-3-oxo-2,3-dihydrofurans, Useful Intermediates in the Synthesis of 1-Aryl-5-methyl-3-pyrazolones . . . . . 283 (erratum: 1035)

Venturello, C., D'Aloisio, R.: A New Facile Synthesis of 1-Aryl-3.6-dimethyl-4(1*H*)-pyridazones . . . . . 790 (erratum: 1036)

Venturello, P., see Tundo, P. 952

Vera, E., see Auricchio, S. 116

Verboom, W., Sukhai, R.S., Meijer, J.: Synthesis of New Heterocyclic Compounds by Reaction of Sodium Sulfide, Sodium Selenide, or Methylamine with the Sulfoxides and Sulfones Prepared from 1-Vinylthio-1-alkynes 47

Verboom, W., Westmijze, H., De Noten, L.J., Vermeer, P., Bos, H.J.T.: A Convenient Route to Various 1-Chloro-1-alkynes 296

Verhé, R., see De Kimpe, N. 741

Verkruijsse, H.D., Hasselaar, M.: An Improved Synthesis of 1,4-Diynes 292

Vermeer, P., see Verboom, W. 296

see Westmijze, H. 390, 430, 432

Vicentini, C.B., see Barco, A. 68

Villieras, J., Perriot, P., Normant, J.F.: A New, Easy Route to 1-Alkynes and Disubstituted

Alkynes by a 1-Carbon Atom Chain Elongation of Bromoalkanes 502

Villieras, J., Perriot, P., Normant, J.F.: Conversion of Aldehydes to Ketones and Homologation of Ketones via the Lithium Salts of 2-Hydroxycarbenoids 968

Vilsmaier, E., Schneider, R.: Eine Methode zur (*N*-Alkylthiomethyl-*N*-tosyl)-aminocarbonylierung von Amiden und Imiden 293

Vincent, E.J., see Galy, J.P. 944

Vincent, J.E., see Bose, A.K. 543

Volkov, N.D., Nazaretian, V.P., Yagupol'skii, L.M.: Preparation of Halodifluoromethanesulfonic Acid Derivatives 972

Vonderheid, C., see Ahlbrecht, H. 127

Von Kiedrowski, G., see Dyong, I. 526

Vorbrüggen, H., Krolikiewicz, K.: A Simple Preparation of Enol Silyl Ethers 34

Vorbrüggen, H., Krolikiewicz, K.: The *in situ* Generation and Reactions of Trimethylsilyl Azide 35

Vors, J.-P., see Cristau, H.-J. 538

Vovk, M.V., see Fetyukhin, V.N. 738

Wackerle, L.: Racemisierungsfreie Aktivierung von α-Aminosäuren mittels Isocyaniden 197

Wakselman, C., Molines, H.: A Simple, Two-Step Synthesis of Methyl 5-Methoxy-3-oxopentanoate (Nazarov's Reagent) 622

Walter, W., Proll, T.: An Improved Preparation of Vinylogous Thiocarboxamides 941

Wang, C.-B., Chang, C.K.: A Convenient Synthesis of Pyrrole Precursors for Octaalkylporphyrins . . 548

Watanabe, S., see Fujita, T. 310, 910

Weber, J., see Schaefer, M. 122

Wehner, G., see Hünig, S. 522

Weinstock, L.M., see Amato, J.S. 970

Westmijze, H., Kleijn, H., Meijer, J., Vermeer, P.: Synthesis of Dithioesters from Organocopper(I) Compounds 432

Westmijze, H., Kleijn, H., Vermeer, P.: A New, Stereospecific Synthesis of *trans*-2-Alkenenitriles from 2-Alkynenitriles and Lithium Tetrahydridoaluminate 430

Westmijze, H., Vermeer, P.: A New and General Route to 1-Trimethylsilyl-1,2-alkadienes 390

Westmijze, H., see Verboom, W. 296

Wieczorek, J.S., see Boduszek, B. 452, 454

Wildeman, J., van Leusen, A.M.: Convenient Alternative Synthesis of Sulfones in Aprotic Medium using Phase-Transfer Catalysis 733

Willner, I., Halpern, M.: Alkylation via Aromatization of Ketones by Phase-Transfer Catalysis . . . . . 177 (cf. p. 944)

Wissner, A.: Tris[trimethylsilyloxy]ethene: A Convenient Preparation of 2,3-Dihydroxyalkanoic Acids from Aldehydes 27

Wolfe, S., Campbell, J.R.: Fumaroyl Chloride: An Acetylene Synthon for the Diels-Alder Synthesis of Specifically Deuteriated Cyclohexenes 117

Wong, T.W., see Tam, J.P. 955

Woolias, M., see Mander, L.N. 185

Wykypiel, W., see Seebach, D. 423

Yagupol'skii, L.M., see Volkov, N.D. 972

Yamada, K., see Hata, T. 189

Yamaguchi, M., see Yamazaki, N. 355

Yamashita, H., Ito, K., Sekiya, M.: *N,N*-Dialkyl-4-diazomethylbenzenesulfonamides as New, Stable Diazoalkanes 531

Yamashita, M., see Kojima, M. 147

Yamato, T., see Tashiro, M. 48

Yamazaki, N., Yamaguchi, M., Higashi, F., Kakinoki, H.: Alkyl-triphenoxy-phosphonium Halides as Condensating Agents 355

Yanovskaya, L.A., see Kryshtal, G.V. 107

Yogo, M., see Kuo, H.S. 188

Yoneda, K., see Kusumi, T. 221

Yoshida, H., see Kojima, M. 147

Yoshida, S., see Morita, T. 379

Yoshii, E., see Koizumi, T. 110

Yoshimura, T., see Furukawa, N. 289

Yoshina, S., see Kuo, H.-S. 187

Yoshiya, H., see Tashiro, M. 988

Yus, M., see Barluenga, J. 896

Zahr, S., Ugi, I.: 4,4,4-Trichloro-2-butenal and Analogs as Reagents for Peptide Synthesis 266

Zaidlewicz, M., Uzarewicz, A., Sarnowski, R.: A Stereoselective Synthesis of Allylic Alcohols via the Reduction of α,β-Unsaturated Epoxides with Diborane 62

Zally, W.J., see Field, G.F. 295

Zamojski, A., see Grynkiewicz, G. 364

Zawadzki, S., see Gajda, T. 549

see Koziara, A. 527

Zecchi, G., see Bizzozero, N. 909

see Garanti, L. 380

Zhdanov, R.I., Buina, N.A., Kapitanova, N.G., Nuretdinov, I.A.: Biologically Active Stable Radicals, XV. Spin-Labeled Alkyl Carbamate-*N*-phosphinic Acid Aziridides 269

Zhdanov, R.I., Porotikova, V.A., Rozantsev, E.G.: Biologically Active Stable Radicals; VII. Spin-Labeling of Nucleosides and Nucleotides at the NH_2-Group 267

Ziegler, J.-C., see Simon, P. 951

Zupančič, B.G., Sopčič, M.: Zur Glykol-Verätherung im Fest-Flüssig-Zweiphasensystem 123

Zwierzak, A., Ślusarska, E.: A Novel Grignard Synthesis of Primary Amines 691

Zwierzak, A., see Gajda, T. 549

see Koziara, A. 527

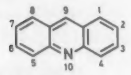
see Osowska, K. 577

COMPOUND INDEX

Reaction Index p. 1024
Index of Special Reagents p. 1031
Index of Apparatus, Laboratory Techniques, etc. p. 1034

SYNTHESIS 1979

● **Acetal Derivatives**
- ***O,O*-Acetal Bis-triflates**
- Synthesis and Reactions 382
- ***S,S'*-Acetal *S,S*-Dioxides**
- Synthesis 240 (5445)
- ***O,O*-Acetal Disulfonates**
- Synthesis 382
- ***S,S*-Acetal *S*-Oxides**
- Synthesis and Reactions 880
● **Acetals (including Thioacetals)**
- ***O,O*-Acetals**
- Synthesis 132, 494, 626 (5549), 631 (5563), 893, 916 (5625), 975
- Reactions 346, 351, 416, 473 (5500), 983, 997
- Reduction 14, 393 (5474)
- ***O,S*-Acetals**
- Reactions 753 (5581)
- ***S,S*-Acetals**
- Synthesis 19, 535, 560 (5542), 839 (5612), 920 (5635)
- Cleavage 273
- Oxidation 240 (5445), 631 (5563)
- Reactions 320 (5471), 560 (5542), 614, 720, 753 (5581), 757 (5591), 994 (5642)
- ***Se,Se*-Acetals**
- Synthesis 397 (5488), 877
- Reactions 77 (5387), 877
- **3-Alkenal *O,O*-Acetals**
- Synthesis and Cleavage 132
- **α-Arylseleno-*O,O*-acetals**
- Synthesis 983
- **1,4-Diketone Bis[*O,O*-acetals]**
- Synthesis and Reactions 603, 605
- **α-Hydroxyketone *S,S*-Acetals**
- Reactions 919 (5632)
● **Acetylenes**
see: Alkynes
● ***CH*-Acidic Compounds**
- Reactions 153 (5401), 156 (5410), 344, 794
● **Acridine**

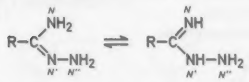


- **Acridanones**
- Alkylation 144 (for correction see: 944), 944
- ***N*-Alkylacridanones**
- Synthesis 944
● **Acyl Carbonates**
- ***in situ* Generation and Reactions** 557 (5536)
- Reactions 788
- **2-Alkenoyl Carbonates**
- Synthesis and Reactions 954
● **Acyl Phosphinates**
- Synthesis 160 (5421)
- Reactions 159 (5420), 160 (5421)
● **Adamantanes**

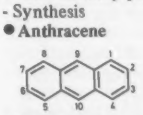
- Ring Cleavage 6, 329
- Substitution Reactions 529
- **Chloroadamantanes**
- Synthesis and Reactions 529
- **Deuterioadamantanes**
- Synthesis 529
● **Alcohols (including *O*-Acyl and *O*-Sulfonyl Derivatives)**
- Synthesis 556 (5532) (5533)
- Reactions 223, 379, 394 (5475), 398 (5489), 562, 573, 749 (5567), 755 (5586), 600, 620, 757 (5590), 822, 893, 916 (5624)
- Reduction 9, 77 (5387)
- **1,5-Alkadien-3-ols**
- Synthesis 6
- **2,3-Alkadienols**
- Cyclization Reactions 744
- **2,5-Alkadienols**
- Synthesis 6
- **3,4-Alkadienols**
- Cyclization Reactions 744
- **Alkanols**
- Synthesis 784
- **2-Alkenols (Allyl Alcohols)**
- Synthesis 45, 62, 237 (5437), 467, 628 (5554)
- Oxidation 415
- Reactions without Cyclization 234 (5429), 475 (5504) (5507), 571, 753 (5579), 754 (5584), 840 (5615), 913 (5617), 994 (5643), 997 (5651)
- **3-Alkenols**
- Synthesis 6, 235 (5432), 314 (5452), 316 (5458), 626 (5547), 627 (5552), 658, 781
- Cyclization Reactions 891
- **4-Alkenols**
- Synthesis 447, 626 (5547), 758 (5594), 837 (5606), 993 (5639)
- Cyclization Reactions 891
- **5-Alkenols**
- Synthesis 758 (5594)
- Cyclization Reactions 318 (5464)
- **6-Alkenols**
- Synthesis 886
- Reduction 209
- **7-Alkenols**
- Synthesis 758 (5594)
- **8-Alkenols**
- Synthesis 886
- **13-Alkenols**
- Synthesis 886
- **5-Alken-3-ynols**
- Synthesis 829
- **2-Alkoxyalkenols**
- Synthesis 482
- **2-Alkynols**
- Synthesis 611
- Reactions without Cyclization 750 (5571)
- Reduction 2, 292, 390
- **3-Alkynols**
- Reactions without Cyclization 836 (5603)
- **Aminoalcohols, General**
- Reactions without Cyclization 916 (5624)
- **2-Aminoalkanols**
- Synthesis 164, 394 (5476), 424, 476 (5509), 482, 996 (5647)
- **3-Aminoalkanols**
- Synthesis 913 (5618)
- Cyclization Reactions 105
- Oxidation 913 (5618)
- **4-Aminoalkanols**
- Cyclization Reactions 106
- **2-Arylalkanols**
- Synthesis 626 (5547)
- **Bridgehead-hydroxybicycloalkanes and *O*-Derivatives**
- Synthesis 53
- **Cyclopropylcarbinols**
- Synthesis 757 (5591)
- **Diarylcarbinols**
- Synthesis 629 (5557)
- **2,2-Dihalo-3-alkenols**
- Synthesis and Cyclization Reactions 77 (5385)
- **Dihydropyranylcarbinols**
- Synthesis 610
- **Dimethylaminomethylcarbinols**
- Synthesis 156 (5409)
- **1-(1,3-Dithian-2-yl)-2-cycloalkenols**
- Synthesis 917 (5627)
- **2-Haloalkanols**
- Reactions without Cyclization 626 (5547)
- Reduction 5
- **3-Halo-2-alkenols**
- Cyclization Reactions 610
- **2-Halocycloalkanols**
- Oxidation 410
- ***o*-Halomethylbenzyl Alcohols**
- Synthesis and Reactions 518
- **4-Hydroxy-1,5-alkadienals**
- Synthesis and Oxidation 800
- **3-Hydroxy-1,5-alkadienes**
- Rearrangement 394 (5477)
- **3-Hydroxy-1,5,6-alkatrienes**
- Synthesis 509
- **2-Hydroxy-1-alken-3-yne Triflates**
- Synthesis 438
- **1-(*o*-Hydroxyaryl)-alkanols**
- Synthesis 366
- ***o*-Hydroxyaryltrihalomethylcarbinols**
- Synthesis 824
- **Hydroxymethylchromones**
- Synthesis and Oxidation 889
- **2-Mercaptoalkanols and *S*-Derivatives**
- Synthesis 482, 758 (5593)
- Reactions 393 (5472)
- **Nitroalkanols**
- Reactions without Cyclization 601
- **Primary Alcohols**
- Synthesis 77 (5386) (5387), 236 (5434) (5435), 238 (5439), 484, 627 (5551), 701, 912
- Oxidation 75 (5380), 134, 157 (5412), 356, 402, 421, 478 (5517), 492, 496, 514, 815
- Reactions 317 (5461), 428, 703
- **Secondary Alcohols**
- Synthesis 77 (5386) (5387), 708
- Oxidation 75 (5380), 157 (5412), 356, 402, 421, 478 (5517), 486, 492, 496, 708, 815
- Reactions 317 (5461), 488, 551, 703
- **2-Selenylalkanols and *Se*-Derivatives**
- Synthesis 482
- **2-Silylalkanols**
- Synthesis and Oxidation 395 (5478)

- *O*-Sulfonyl-Derivatives
- Reactions 178
- Reduction 836 (5602)
- Tertiary Alcohols
- Synthesis 192, 610, 942
- Dehydration 314 (5451), 942
- Oxidation 419
- Reactions 551
- 2,2,2-Trifluoroethanol
- Reactions 819
- ● Aldehydes
- Synthesis 75 (5380), 134, 157 (5412), 165, 166, 207, 238 (5439) (5441), 273, 317 (5461), 357, 402, 477 (5512) (5513), 478 (5515) (5517), 479 (5520), 492, 496, 555 (5529), 633 (review), 704, 720, 753 (5581), 815, 877, 996 (5649), 998 (5654)
- Cyclization Reactions 41, 160 (5423), 184, 216, 287, 346, 366, 440, 732, 801, 920 (5635), 975
- Epoxide Formation 395 (5480), 400 (5495)
- Reactions without Cyclization 6, 26, 27, 79 (5392), 88, 112, 156 (5409), 158 (5416) (5417), 160 (5422), 192, 201, 235 (5432), 240 (5446), 388, 397 (5488), 495, 555 (5529), 610, 635, 671, 722, 754 (5582), 838 (5609), 884, 890, 918 (5631), 968, 985
- Reduction 77 (5386) (5387), 236 (5434), 484, 995 (5645)
- Acrolein
- Cyclization Reactions 271
- ω-Acyloxy-ω-arylthioalkanals
- Synthesis 758 (5593)
- 2,4-Alkadienals
- Synthesis 158 (5417), 660, 997 (5651)
- Alkanals
- Synthesis 132, 153 (5399), 420, 630 (5561), 637, 640, 641, 642, 645, 701, 703
- Cyclization Reactions 474 (5502)
- Reactions without Cyclization 35, 132, 153 (5399) (5401), 187, 319 (5468), 447, 505, 627 (5552)
- 2-Alkenals
- Synthesis 7, 17, 45, 132, 358, 497, 507, 553 (5525), 636, 641, 643, 651, 652, 653, 658, 768, 799
- Cyclization Reactions 107
- Oxidation 495
- Reactions without Cyclization 89, 107, 398 (5491)
- Reduction 11
- 3-Alkenals
- Synthesis 132, 159 (5419), 642, 657
- 4-Alkenals
- Synthesis 644, 750 (5572)
- 6-Alkenals
- Cyclization Reactions 416
- 5-Alkynals
- Synthesis 154 (5403), 394 (5477)
- 6-Alkynals
- Synthesis 154 (5403)
- 3-Amino-2-alkenals
- Synthesis 370, 449, 553 (5525)
- Cyclization Reactions 449
- Reactions without Cyclization 242, 553 (5525), 981
- *o*-Aminoarenecarboxaldehydes
- Synthesis 99, 753 (5580), 840 (5614)
- Cyclization Reactions 759 (5596)
- A-Nor-steroid-2-carboxaldehydes
- Synthesis 410
- Aromatic Aldehydes
- Synthesis 144, 708
- Cyclization Reactions 755 (5587)
- Reactions without Cyclization 26, 628 (5553), 679, 712, 803, 916 (5625), 918 (5630)
- 3-Aryl-2-alkenals (Cinnamaldehydes etc.)
- Synthesis 254, 708
- 2-Azidoalkanals
- Synthesis and Reactions 395 (5480)
- Chloral
- Reactions 90, 266, 824
- Cycloalkadienecarboxaldehydes
- Synthesis 159 (5418), 558 (5537)
- 3-(3-Cyclohexenyl)-2-alkenals
- Synthesis and Reactions 799
- 3-Cyclohexyl-2-alkenals
- Synthesis 799
- 2,2-Dihaloalkanals
- Reactions without Cyclization 266
- 4,4-Dihalo-2-alkenals
- Synthesis 266
- Enolizable Aldehydes
- Reactions without Cyclization 553 (5525), 699, 730, 741, 750 (5572)
- 2,3-Epoxyalkanals
- Reactions 900
- Formaldehyde
- Cyclization Reactions 161, 219
- Formylchromones
- Synthesis 889
- Formylquinolines
- Synthesis and Reactions 904
- 3-Halo-2,4-alkadienals
- Synthesis 247
- 2-Haloalkanals
- Reactions 191, 749 (5568)
- 3-Halo-2-alkenals
- Synthesis and Reactions 247
- Hydroxyalkanals, General
- Synthesis 405
- 2-Hydroxyalkanals and *O*-Derivatives
- Synthesis 203, 478 (5516), 630 (5561), 635, 837 (5607)
- 3-Hydroxy-2-alkenals and *O*-Derivatives
- Cyclization Reactions 370, 449
- *o*-Hydroxyarenecarboxaldehydes and *O*-Derivatives
- Synthesis 839 (5612) (5613)
- Cyclization Reactions 906
- Reactions without Cyclization 906
- 2-Hydroxymethylenealkanals and *O*-Derivatives
- Cyclization Reactions 449
- 2-Oxoalkanals
- Synthesis 868
- Cyclization Reactions 837 (5607)
- 4-Oxoalkanals
- Synthesis 395 (5479), 754 (5583)
- 3-Pyridinio-2-alkenal Salts
- Synthesis and Reactions 251
- 2-Selenylalkanals and *Se*-Derivatives
- Synthesis 982
- Reactions 983
- 3-Silylalkanals
- Synthesis 398 (5491)
- Silylbenzaldehydes
- Synthesis 865
- 4,4,4-Trihalobutenals
- Synthesis 266
- ● Alkaloids and Relatives
- Synthesis 749 (5569)
- ● Alkanes
- from Like Carbon Skeletons 75 (5379)
- Non-Linear Alkanes
- Oxidation 419
- ● Alkenes
- Synthesis 5, 10, 75 (5379), 153 (5400), 155 (5405), 233 (5424), 234 (5429), 315 (5454), 487, 749 (5568), 884, 993 (5639)
- Cyclization Reactions 160 (5423), 838 (5610)
- Cyclopropanation 5, 425
- Epoxidation 399 (5494)
- Hydroxyamination 394 (5476)
- Oxidation 494
- Photochemical Addition Reactions 819
- Reactions without Cyclization 67, 155 (5407), 316 (5457), 476 (5509), 701, 758 (5593), 962
- Reduction 2, 75 (5379)
- 1,4-Alkadienes
- Synthesis 768, 826
- 1,5-Alkadienes
- Synthesis 159 (5419), 826
- 1,6-Alkadienes
- Cyclization Reactions 897
- 1-Alkenes
- Synthesis 313 (5450), 317 (5459), 447, 780, 994 (5643)
- Cyclization Reactions 150, 400 (5496)
- Reactions without Cyclization 78 (5390), 86, 236 (5435), 473 (5499), 475 (5506), 495, 498, 555 (5530), 557 (5534), 577
- 3-(1-Alkenyl)-cyclopentenes
- Synthesis (stereospecific) 114
- 1-Aryl-1-alkenes
- Synthesis 835 (5601)
- Reactions without Cyclization 310
- 1-Aryl-1-alkenes and Hetero Analogs
- Synthesis 192
- 2-Aryl-1-alkenes
- Reduction 465
- Cycloalkenes
- Synthesis 314 (5451)
- 1,2-Diarylethylenes and Hetero Analogs
- Synthesis 712
- Exomethylene Compounds
- Synthesis 416
- Oxidation 942
- Non-Conjugated Dienes and Polyenes
- Bromination 964
- Reactions without Cyclization 758 (5594)
- Non-Terminal Alkenes
- Synthesis 12, 45, 154 (5402), 209, 234 (5427) (5428), 235 (5430) (5431), 314 (5452), 372, 393 (5472), 399 (5492), 469, 475 (5504), 476 (5508), 813, 826
- Oxidation 209, 316 (5456), 520
- Ozonization 917 (5628)
- Reactions without Cyclization 237 (5437)
- 2-Styrylquinazoline Derivatives
- Synthesis 803
- Tetraarylethylenes
- Synthesis 12
- ● Alkoxycarbonyl Azides
- Synthesis and Reactions 530
- ● Alkyl Compounds
- Alkylarenes
- Reactions 921
- Alkyl *O*-Heterocyclic Compounds
- Synthesis 146
- ● Alkynes
- Synthesis 247, 994 (5641)
- Cyclization Reactions 689
- Cyclopropenation 625 (5546)
- Reactions without Cyclization 155 (5405), 235 (5431), 313 (5449), 501
- Reduction 2, 75 (5379)
- Acetylene
- Reactions without Cyclization 826
- 5-Alken-1-ynes
- Synthesis 509
- 6-Alken-1-ynes
- Synthesis 509
- 1-Alkynes
- Synthesis 475 (5506), 503, 628 (5553)
- Reactions without Cyclization 235 (5430), 296, 314 (5452), 316 (5458)
- 3-(1-Alkynyl)-cycloalkenes
- Synthesis and Reactions 114
- 3-(1-Alkynyl)-pyrroles
- Synthesis 534
- 1-Aryl-1-alkynes and Hetero Analogs
- Synthesis 76 (5382), 628 (5553), 860
- 1,4-Diynes
- Synthesis 292
- Non-Conjugated Diynes
- Cyclization Reactions 854
- Non-Terminal Alkynes
- Cyclization Reactions 525
- Oxidation 557 (5535)

● **Allenes**
- Synthesis 5, 750 (5571)
- **1,2-Alkadienes**
- Synthesis 473 (5499)
- Reactions 509
- **1,2-Diaminoallenes**
- Synthesis 214
- **Functionally Substituted 1,5,6-Alkatrienes**
- Synthesis 509
- **1-Silylallenes**
- Synthesis 390
● **Aloesaponarins**
- Synthesis 148
● **Aluminum Alkoxides**
- Reactions 900
● **Amide Acetals**
- **Formamide *O,O*-Acetals**
- Cyclization Reactions 154 (5402)
- Reactions without Cyclization 553 (5525)
● **Amidines**
- Synthesis 305
- Cyclization Reactions 595
- **2-Alkynamidines**
- Synthesis 250
- **3-Amino-2-alkenamidines**
- Synthesis 250
- **Formamidines**
- Synthesis 547
- **3-Halo-2-alkenamidines**
- Synthesis 250
● **Amidinium Salts**
- Synthesis 340, 342
- Reactions 340, 690
● **Amidrazones**



- Synthesis and Cyclization Reactions 359
● **Aminals (Cyclic)**
- Synthesis and Reactions 837 (5607)
● **Amine Oxides**
- Synthesis and Reactions 511
● **Amines**
- **1,3-Alkadienamines**
- Synthesis 128
- Reactions 153 (5401)
- **2,4-Alkadienamines**
- Synthesis 511
- **Alkanamines**
- Synthesis 751 (5575)
- Oxidation 838 (5608)
- Reactions 70, 79 (5494), 80 (5396), 167, 478 (5515), 687, 993 (5638)
- **1-Alkenamines**
see: Enamines
- **2-Alkenamines**
- Synthesis 555 (5530)
- Reactions 750 (5572)
- **3-Alkenamines**
- Reactions 891, 980
- **4-Alkenamines**
- Reactions 891
- ***N*-Alkylarenamines**
- Synthesis 728
- Reactions 99, 728
- **Aminoallenes**
- Synthesis 214
- ***o*-Aminodiphenylmethanes**
- Synthesis 837 (5605)
- **6-Aminopentafulvenes**
- Reactions 981
- **Arenamines**
- Synthesis 18, 587, 869
- Oxidative *N–N* Coupling 413
- Reactions 753 (5580), 835 (5601), 837 (5605), 840 (5614), 897
- **2-Haloalkanamines**
- Synthesis 577
- ***N*-Heterocyclic *C*-Amino Compounds**
- Synthesis 214, 215, 251, 256, 305, 377
- Reactions 305
- Selective *N*-Alkylation 217
- ***S*-Heterocyclic *C*-Amino Compounds**
- Synthesis 214
- ***S,N*-Heterocyclic *C*-Amino Compounds**
- Synthesis 215
- **Primary Amines**
- Synthesis 163, 236 (5433), 691, 751 (5573)
- Oxidation 419
- Reactions 437, 627 (5551), 726, 803, 916 (5624), 993 (5638), 995 (5644), 999 (5656)
- **Secondary Amines**
- Synthesis 30, 70, 236 (5433), 551, 628 (5555)
- Reactions 238 (5440), 555 (5530), 598, 602, 830, 916 (5624)
- **Tertiary Amines**
- Synthesis 156 (5409), 629 (5558)
- **Tris[chloromethyl]-amine**
- Synthesis 168
● **Aminium Salts**
- **2,4-Alkadienaminium Salts**
- Synthesis and Reactions 511
- **Quaternary Aminium Salts**
- Anion Exchange 752 (5577)
● **Amino Acids and Derivatives**
- Synthesis 677
- Reactions 726
- ***N*-Acylamino Acid Esters**
- Reactions 558 (5537), 755 (5585)
- **α-(*N*-Acylamino)-carboxylic Acids**
- Reactions 231, 558 (5537)
- **Amino Acid 4-Carboxymethylbenzyl Esters**
- Synthesis 955
- **Amino Acid 4-(Phenacyloxycarbonyl-methyl)-benzyl Esters**
- Synthesis and Reactions 956
- **Amino Acid 2,2,2-Trichloroethyl Esters**
- Synthesis 24
- **α-Aminocarboxamides**
- Synthesis 726
- **α-Aminocarboxylic Esters**
- Synthesis 355
- Enantiomeric Enrichment 630 (5560)
- Reactions 197, 735, 918 (5629)
- **α-Aminocarboxylic Acids**
- Synthesis 80 (5398), 163
- Reactions 24, 197, 558 (5537), 726
- **α-Amino-β-hydroxycarboxylic Acids**
- Synthesis 216
- ***N,N'*-Carbonyl-bis[amino acids]**
- Synthesis 735
- ***N*-Formylamino Acid Esters**
- Synthesis 709
- **Phenylglycine and Derivatives**
- Synthesis 26
- **Proline Esters**
- Reactions 110
- ***N*-Protected Amino Acid Esters**
- Synthesis 955, 957, 961
- ***N*-Protected Amino Acids**
- Esterification 955–958, 961
- **Pyrrolidine-2,5-dicarboxylic Acids**
- Synthesis 150
- **Tryptophane**
- Reactions 276
● **Aminohaloboranes**
- Reactions 99
● **Aminosulfinylphosphonic Acid Esters**
- Synthesis 96
● **Anthracene**



- **Anthracenes**
- Diels-Alder Reactions 270
- **Anthrones**
- Reactions with Retention of the Ring Skeleton 177
- **1,4,4a,5,8,8a,9,9a,10,10a-Decahydro-anthracenes**
- from Like Ring Skeletons 614
● **Araliphatic Compounds**
- **1,2-Diarylalkanes**
- Synthesis 31, 930
- **Diarylmethanes**
- Synthesis 922, 931
- **Dihydroarenes**
- Dehydrogenation 233 (5425)
- **Ethylarenes**
- Oxidation 145
● **Arenes, General**
- from Like Ring Skeletons 233 (5425), 626 (5548)
- Reduction 465
- **Methylarenes**
- Halogenation 233 (5426), 418
● **Aroxyls**
- Synthesis 412
● **Arsenine**

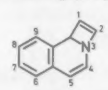
- Ring Synthesis 871
● **Arsines**
- **4,5-Bis[diphenylarsinomethyl]-1,3-dioxolanes**
- Synthesis 351
● **Artemisia Alcohol**
- Synthesis 6
● **1-Azabicyclo[3.3.0]octane**

- Ring Synthesis 681
● **2-Azabicyclo[2.2.2]octane**

- Ring Transformation 51
● **1,4-Azaphosphorin**

- **1,4-Dihydro-P^V-1,4-azaphosphorins**
- Ring Synthesis 109
● **Azete**

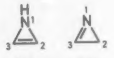
- **Azetidines**
- Ring Synthesis 105, 211, 544
- Ring Transformation 415
● **Azeto[2,1-*a*]isoquinoline**



9b*H*-

- **1,2,4,5-Tetrahydro-9b*H*-azeto[2,1-*a*]isoquinolines**
- Ring Synthesis 211
● **Azido Compounds**
- Reduction 751 (5573)
- **α-Azidoaldehydes**
- Synthesis and Reactions 395 (5480)
- ***o*-Azidoarenecarboxamides**
- Cyclization Reactions 308
- **Azidoarenes**
- Synthesis 207
- Cyclization Reactions 305, 308, 855
- Reactions without Cyclization 305
- Reduction 18
- **2-Azido-1,3-benzothiazolium Salts**
- Reactions 805

- α-Azidonitriles
- Synthesis 395 (5480)
- Azidosilanes
- Cyclization Reactions 855
- *gem*-Azidosiloxy Compounds
- Synthesis 35
- Glycosyl Azides
- Synthesis and Reactions 937
- Azines
- Aldazines
- Reactions without Cyclization 92
- Ketazines
- Synthesis 413
- Azirine

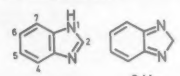


1*H*- 2*H*-

- Aziridines
- Reactions with Retention of the Ring Skeleton 269
- Azlactones
- Synthesis and Reactions 558 (5537)
- Azulene

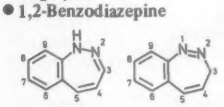
- Azulenes
- Ring Synthesis 981
- 1,2,3,3a,4,5,6,7-Octahydroazulenes
- Ring Synthesis 836 (5603)
- 1,2,4,5,6,7,8,8a-Octahydroazulenes
- Ring Synthesis 553 (5526), 752 (5578)
- Decahydroazulenes
- Ring Synthesis 416

- Benzenes
- from Bromobenzenes 475 (5505)
- Acylation 303
- Oxidation 536
- Substitution 921
- Alkylbenzenes
- Synthesis 929
- Functionally Substituted Benzenes
- Ring Synthesis 76 (5383)
- Silylbenzenes
- Ring Synthesis 854
- Benzimidazole



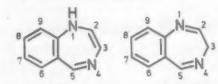
2*H*-

- 1-Hydroxybenzimidazole 3-Oxides
- Ring Synthesis 682
- 1,2-Benzodiazepine



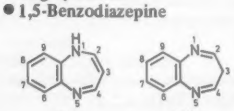
1*H*- 3*H*-

- Ring Synthesis 261, 380
- 1,4-Benzodiazepine



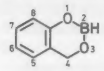
1*H*- 3*H*-

- 2,3-Dihydro-1*H*-1,4-benzodiazepines
- from Like Ring Skeletons 718
- Ring Synthesis 174
- 1,5-Benzodiazepine



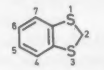
1*H*- 3*H*-

- Ring Synthesis 261
- 1,3,2-Benzodioxaborin

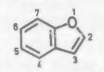


4*H*-

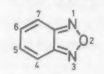
- Ring Synthesis and Cleavage 366
- 1,3-Benzodithiole



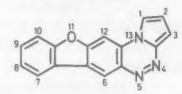
- 1,3-Benzodithioles
- Substitution Reactions and Ring Cleavage 630 (5561)
- 2-Imino-1,3-benzodithioles
- Ring Synthesis 297
- 1-Benzofuran



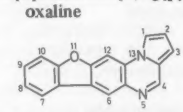
- 1-Benzofurans
- Anellation Reactions 122
- Ring Cleavage 993 (5639)
- 2,4,5,6-Tetrahydro-1-benzofurans
- Ring Synthesis and Cleavage 434
- 2,3,4,5,6,7-Hexahydro-1-benzofurans
- Ring Synthesis 570
- Octahydro-1-benzofurans
- Ring Synthesis 892
- Benzofurazan



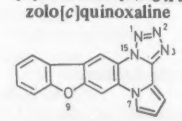
- Benzofurazan 1-Oxides (Benzofuroxans)
- Ring Transformation 682
- [1]Benzofuro[2,3-*g*]pyrrolo[2,1-*c*][1,2,4]-benzotriazine



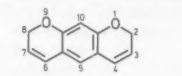
- Ring Synthesis 587
- [1]Benzofuro[3,2-*g*]pyrollo[1,2-*a*]quinoxaline



- Unsaturated System and 4,5-Dihydro Derivatives
- Ring Synthesis 587
- [1]Benzofuro[3,2-*g*]pyrrolo[1,2-*a*]tetrazolo[*c*]quinoxaline



- Ring Synthesis 587
- Benzo[1,2-*b*;5,4-*b'*]dipyran

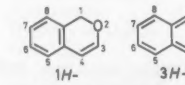


2*H*, 8*H*-

- Ring Synthesis 715
- 1-Benzopyran

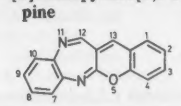
see: Chromenes

- [2]Benzopyran

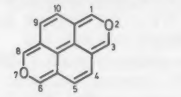


1*H*- 3*H*-

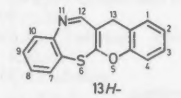
- 3,4-Dihydro-1*H*-2-benzopyrans
- Ring Synthesis 368
- 3,4,4a,5,8,8a-Hexahydro-1*H*-2-benzopyrans
- Ring Synthesis 43
- [1]Benzopyrano[2,3-*b*][1,5]benzodiazepine



- 5a,6,11,13-Tetrahydro Derivatives
- Ring Synthesis 337
- [2]Benzopyrano[6,5,4-*def*][2]benzopyran

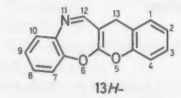


- Ring Synthesis 418
- [1]Benzopyrano[2,3-*b*][1,5]benzothiazepine



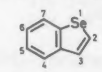
13*H*-

- 5a,11-Dihydro-13*H* Derivatives
- Ring Synthesis 337
- [1]Benzopyrano[2,3-*b*][1,5]benzoxazine

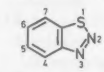


13*H*-

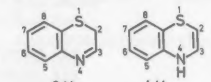
- 5a,11-Dihydro-13*H* Derivatives
- Ring Synthesis 337
- 1-Benzoselenophene



- Anellation Reactions 122
- 1,2,3-Benzothiadiazole

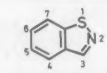


- Ring Transformation 297
- 1,4-Benzothiazine

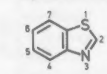


2*H*- 4*H*-

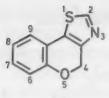
- 1,2,3,4-Tetrahydro-1,4-benzothiazines
- Ring Synthesis 682
- 1,2-Benzothiazole



- 1,2-Benzothiazolium Salts
- Ring Transformation 442
- 1,3-Benzothiazole



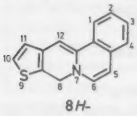
- 1,3-Benzothiazoles
- Ring Synthesis 591
- Reactions with Retention of the Ring Skeleton 155 (5406), 157 (5414), 159 (5418) (5419)
- 1,3-Benzothiazolium Salts
- Reduction 157 (5414), 159 (5418)
- 2,3-Dihydro-1,3-benzothiazoles
- from Like Ring Skeletons 157 (5414), 159 (5418)
- Ring Cleavage 157 (5414), 159 (5418) (5419)
- Benzo[*b*][1,3]thiazolo[5,4-*d*]pyran



4*H*-

- Ring Synthesis 591

● **Benzo[*a*]thieno[2,3-*g*]quinolizine**



8*H*-

- **5,6,12, 12a-Tetrahydro-8*H* Derivatives**
- Ring Synthesis 195

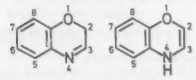
● **1-Benzothiophene**

- Ring Synthesis 442
- Anellation Reactions 122

● **1,3-Benzoxathiole**

- **1,3-Benzoxathioles**
- Ring Cleavage 223
- **1,3-Benzoxathiolium Salts**
- Reactions with Retention of the Ring Skeleton 223

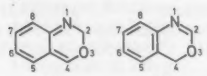
● **1,4-Benzoxazine**



2*H*- 4*H*-

- **2*H*-1,4-Benzoxazines**
- Ring Synthesis 220
- **3,4-Dihydro-2*H*-1,4-benzoxazines**
- Ring Synthesis 220, 541

● **3,1-Benzoxazine**



2*H*- 4*H*-

- **Isatoic Anhydrides (2,4-Dioxo-1,2-dihydro-4*H*-3,1-benzoxazines)**
- Ring Transformation 682

● **Betaines**

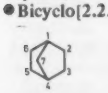
see also: N-Sulfinobetaines

- **Betaines derived from Amino Acids**
- Synthesis 569

● **Biaryls**

- Synthesis 993 (5640)
- **Biphenyls**
- Synthesis 693, 868, 931
- Reactions 49
- **Hydroxybiphenyls**
- Synthesis 923, 927

● **Bicyclo[2.2.1]heptane**



- **Bicyclo[2.2.1]heptenes**
- Ring Synthesis and Cleavage 516

● **Bicyclo[3.2.0]heptane**

- **Bicyclo[3.2.0]heptanes**
- Reactions with Retention of the Ring Skeleton 942
- **Bicyclo[3.2.0]-2-heptenes**
- Synthesis and Ring Cleavage 942

● **Bicyclo[4.1.0]heptane**

- **Bicyclo[4.1.0]heptanes**
- Ring Synthesis 570
- **Bicyclo[4.1.0]-3-heptenes**
- Ring Synthesis 807

● **Bicyclo[3.2.2]nonane**

- Ring Transformation 333

● **Bicyclo[3.3.1]nonane**

- **Bicyclo[3.3.1]nonanes**
- Ring Synthesis 54, 321 (review)
- Substitution Reactions 53
- **Bicyclo[3.3.1]-2-nonenes**
- Ring Synthesis 6, 323

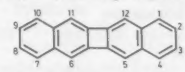
● **Bicyclo[2.2.2]octane**

- Ring Transformation 333

● **Bi-cyclopropenyls**

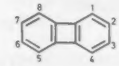
- Synthesis 9

● **2,3;2',3'-Binaphthylene**



- Ring Synthesis 694

● **Biphenylene**



- Ring Synthesis 693

● **Biphenyls**

see: Biaryls

● **Bipyridines and Derivatives**

- **1,4'-Bipyridinium Salts**
- Reactions 452, 454
- **Hydrogenated 3,3'-Bipyridines**
- Ring Synthesis 948

● ***gem*-Bis-triflates**

- Synthesis 382

● **Bitropyls (Bi-cycloheptatrienyls)**

- Synthesis 9

● **9-Borabicyclo[3.3.1]nonanes**

- **9-(1-Alkynyl)-9-borabicyclo[3.3.1]nonanes**
- Reactions 104

● **Boranes**

- **2-Alkenylboranes**
- Reactions 627 (5552)
- **1-Alkynylboranes**
- Reactions 104
- **Trialkylboranes**
- Reactions 146, 235 (5430), 701
- **Tris[4-alkenyl]-boranes**
- Synthesis and Reactions 758 (5594)
- **Tris[5-alkenyl]-boranes**
- Synthesis and Reactions 758 (5594)
- **Tris[7-alkenyl]-boranes**
- Synthesis and Reactions 758 (5594)

● **Boric Acid Esters**

- **Trialkyl Borates**
- Synthesis 702
- Reactions 703

● **Boronic Acids**

- **Areneboronic Acids**
- Reactions 366

● **Boroxins**

- Ring Synthesis and Cleavage 704

● **Bromochloro Compounds**

- ***vic*-Bromochloroalkanes**
- Synthesis 488

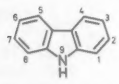
● ***C*-Bromo Compounds**

- Reactions 234 (5428), 559 (5540) (5541)
- Reduction 4
- **2-Alkoxy-3-bromo-1-alkenes**
- Reactions 553 (5526)
- ***vic*-Aminobromoalkanes**
- Synthesis 577
- **Bis[*vic*-dibromo]-alkanes**
- Synthesis and Selective Debromination 964
- **Bridgehead-bromobicycloalkanes**
- Synthesis and Reactions 53
- **α-Bromoaldehydes and Ketones**
- Synthesis 65
- Reactions 956
- **Bromoalkanes**
- Synthesis 749 (5567), 784
- Oxidation 996 (5649)
- Reactions 141, 156 (5409), 178, 275, 372, 488, 503, 556 (5531), 733, 751 (5575), 952
- Reduction 75 (5379), 472
- **Bromoalkenes Type C=C–Br**
- Synthesis 767, 994 (5641)
- Reactions 503, 555 (5530), 996 (5648)
- **Bromoalkenes Type C=C–C–Br**
- Reactions 139, 142, 203, 398 (5490), 503, 919 (5633), 952
- **Bromoalkenes Type C=C–C–C–Br**
- Synthesis 37
- **1-Bromo-1-alkenylsilanes**
- Synthesis and Reactions 399 (5492)
- **2-Bromoalkyl Ethers**
- Reactions 688
- **Bromoalkynes Type C≡C–C–Br**
- Reactions 473 (5499), 833
- **Bromoallenes Type C=C=C–Br**
- Reactions 475 (5506), 832
- **Bromoarenes**
- Synthesis 489, 763, 855, 856, 931
- Reduction 475 (5505)
- **α-Bromocarboxylic Acid Derivatives**
- Synthesis 627 (5550)
- **Bromomethylarenes**
- Synthesis 856
- **5- and 7-Bromonorbornanelactones**
- Synthesis 990
- ***vic*-Dibromoalkanes**
- Reactions 994 (5641)
- ***vic*-Dibromoalkenes Type C=C–(C_n)–CBr–CBr**
- Synthesis 964, 967
- **Dibromoalkynes Type Br–C–C≡C–C–Br**
- Reactions 373
- ***o*-Dibromoarenes**
- Reactions 693
- **Dibromomethane**
- Reactions 313 (5450)
- **Dibromomethylarenes**
- Synthesis 856
- Reactions 865
- **Tetrabromomethane**
- Reactions 627 (5550)
- **1,1,1-Tribromoalkanes**
- Reactions 968

● ***N*-Bromo Compounds**

- ***N*-Bromophosphoroamidic Esters**
- Synthesis and Reactions 577

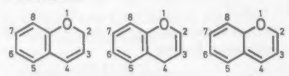
● **Carbamic Acid Esters**
- **Alkyl Carbamates**
- Reactions 236 (5433)
- ***N*-Alkylcarbamic Esters**
- Synthesis 142
- **Alkyl *N*-Phosphonylcarbamates**
- Synthesis and Reactions 269
- **Aryl *N,N*-Dialkylcarbamates**
- Reduction 156 (5409)
- **Benzyl Carbamates**
- Reactions 985
- **Cyclic Carbamic Esters**
- Synthesis 584
- ***N*-(2-Hydroxyalkyl)-carbamic Esters**
- Synthesis 316 (5457)
- ***N*-(Pyrazolyl)-carbamic Esters**
- Synthesis 586
● **Carbamimidic Acid Esters (Isoureas)**
- Synthesis 563, 573
- Reactions 561 (review)
● **Carbamimidothioic Acid Esters (Isothioureas)**
- Synthesis and Reactions 53
● **Carbazole**



- Ring Synthesis 49, 935
● **Carbenes**
- **Alkoxycarbonylcarbenes**
- Reactions 625 (5546)
- **Dihalocarbenes**
- Reactions 5
● **Carbenium Salts**
- Generation and Reactions 8
● **Carbocations**
see: Carbenium Salts
● **Carbodiimides**
- Cyclization Reactions 525
- Reactions without Cyclization 563, 573
- ***N,N'*-Bis[1-haloalkyl]-carbodiimides**
- Synthesis 739
● **Carbon Disulfide**
- Reactions 432, 971
● **Carbonic Acid Esters**
- **1-Alkenyl Carbonates**
- Synthesis 320 (5469)
- **Diaryl Carbonates**
- Reactions 359
● **Carbonimidodithioic Acid Esters**
- ***N*-Aminocarbonimidodithioic Esters**
- Synthesis and Reactions 919 (5633)
● **Carbon Monoxide**
- Reactions 598
● **Carbonochloridic Acid Esters**
- Reactions 320 (5469)
- **Alkyl Carbonochloridates**
- Synthesis 601
- Reactions 396 (5484)
● **Carbonochloridothioic Acid Esters**
- ***S*-Alkyl and *S*-Aryl Carbonochloridothioates**
- Synthesis 185
- Reactions 600
● **Carbotrithioperoxoic Acid Esters**
- Synthesis 971
● **Carboximidic Acid Esters**
- **Alkyl *N*-Phosphonylformimidates**
- Synthesis and Reactions 691
- **Alkylthiomethyl Imidates**
- Reactions 293
● **Carboximidic Acid Halides**
- **2-Alkenimidoyl Halides**
- Reduction 7
● **Carboximidoselenoic Acids**
- Reactions 66
● **Carboxylic Acid Amide Dichlorides**
- **Formamide Dichlorides**
- Reactions 376
● **Carboxylic Acid Amides**
- Synthesis 197, 396 (5483), 479 (5519)
- Dehydration 227
- Reactions without Cyclization 318 (5463), 319 (5466)
- **Acetamides**
- Synthesis 916 (5624)
- **2-Acylimino-2,3-dihydro-1,3-benzothiazoles**
- Synthesis 805
- ***N*-(Acylthiomethyl)-2-(acylthio)-alkanamides**
- Synthesis 810
- **Alkanamides**
- Reactions without Cyclization 244, 464
- **2-Alkenamides**
- Synthesis 768
- **4-Alkenamides**
- Synthesis 840 (5615)
- ***N*-(1-Alkenyl)-carboxamides**
- Synthesis 15, 117
- Reactions without Cyclization 117
- ***N*-(Alkylaminomethyl)-carboxamides**
- Synthesis and Reactions 532
- ***N*-Alkylcarboxamides**
- Synthesis 275
- Reactions without Cyclization 101, 528
- **Alkylformamides**
- Synthesis and Reactions 551
- **2-Alkynamides**
- Synthesis 247
- **3-Amino-2-alkenamides**
- Reactions without Cyclization 242
- ***N*-Aroylindoles**
- Synthesis and Cyclization Reactions 151
- ***N*-(2-Arylalkyl)-carboxamides**
- Synthesis and Cyclization Reactions 195
- ***N*-Arylcarboxamides**
- Synthesis 17
- ***o*-Azidoarenecarboxamides**
- Cyclization Reactions 308
- ***N*-Chloromethyl-2-haloalkanamides**
- Synthesis and Reactions 810
- **Cyanoacetamides**
- Cyclization Reactions 257
- ***N,N*-Dialkylalkanamides**
- Synthesis 528
- Reactions without Cyclization 954
- ***N,N*-Dialkylarenecarboxamides**
- Synthesis 528
- **Dialkylformamides**
- Reactions 547
- **1,3-Diaryl-3-oxopropanamides**
- Synthesis 302
- **2-Hydroxyalkanamides and *O*-Derivatives**
- Synthesis 647
- **3-Hydroxyalkanamides and *O*-Derivatives**
- Synthesis 464
- ***N*-(*o*-Hydroxyaryl)-carboxamides**
- Cyclization Reactions 541
- ***N*-(Hydroxymethyl)-carboxamides**
- Synthesis and Reduction 319 (5466)
- **2-Imino-3-oxoalkanamides**
- Synthesis and Cyclization Reactions 794
- **4-Mercapto-3-oxoalkanamides and *S*-Derivatives**
- Synthesis 621
- ***N*-Methylcarboxamides**
- Synthesis 319 (5466)
- ***N*-Monosubstituted Carboxamides**
- Reactions without Cyclization 547
- **Nitriloacetamides (Cyanoformamides)**
- Synthesis 340
- **3-Oxoalkanamides**
- Synthesis 247, 302, 752 (5576), 954
- Reactions without Cyclization 621, 752 (5576)
- **3-Oxo-4-alkenamides**
- Synthesis 954
- **Silylarenecarboxamides**
- Synthesis 865
- **Thiophene-3-acetamides**
- Synthesis and Cyclization Reactions 195
- **Trifluoroacetamides**
- Reactions 628 (5555)
● **Carboxylic Acid Anhydrides**
- Reactions 548
- **Acyl Trifluoroacetates**
- *in situ* Formation 303
● **Carboxylic Acid Azides**
- **4-Azidocarbonylpyrazoles**
- Synthesis and Reactions 586
● **Carboxylic Acid Bromides**
- Reactions 204
● **Carboxylic Acid Chlorides**
- Reactions without Cyclization 318 (5462), 396 (5481) (5484), 438, 476 (5510), 477 (5511), 610, 622, 756 (5589), 787
- Reduction 238 (5439), 912
- **Alkanoyl Chlorides**
- Synthesis 209
- Reactions without Cyclization 147, 204, 209, 939
- **4,4-Dihalo-2-alkenoyl Chlorides**
- Synthesis and Reactions 266
- **2-Haloalkanoyl Chlorides**
- Reactions without Cyclization 810
- **Silylbenzoyl Chlorides**
- Synthesis 865
- **Trichloroacetyl Chloride**
- Reactions 689
● **Carboxylic Acid Esters**
- Synthesis 158 (5416), 223, 394 (5475), 479 (5519) (5521), 491, 558 (5538), 755 (5586), 917 (5628), 999 (5656)
- Reactions without Cyclization 295, 396 (5482), 757 (5592), 919 (5634)
- **Acetic Esters**
- Synthesis 916 (5624)
- **2-Acyl-2,4,8-alkatrienoic Esters**
- Synthesis 107
- **2-Acyl-5-oxoalkanoic Esters**
- Synthesis 107
- **2,4-Alkadienoic Esters**
- Cyclization Reactions 415
- **Alkanoic Esters**
- Synthesis 648, 881
- Cyclization Reactions 160 (5423)
- Reactions without Cyclization 153 (5401), 239 (5444), 464, 627 (5550), 631 (5563), 836 (5603)
- **2-Alkenoic Esters**
- Synthesis 79 (5393), 516, 554 (5527), 655, 656, 836 (5604), 884, 914 (5620)
- Cyclization Reactions 75 (5381)
- Oxidation 495
- Reactions without Cyclization 82, 398 (5491), 556 (5531), 760 (5599)
- **5-Alkenoic Esters**
- Synthesis 828
- **ω-Alkenoic Esters**
- Reactions without Cyclization 239 (5443)
- **2-Alkenyl Carboxylates**
- Reactions 474 (5503), 994 (5643)
- **Alkyl Carboxylates**
- Synthesis 920 (5636), 1000 (5658)
- Reactions 740
- **2-Alkynoic Esters**
- Cyclization Reactions 76 (5383), 525
- Reactions without Cyclization 87
- **3-Aminoalkanoic Esters**
- Synthesis 760 (5599)
- Reactions without Cyclization 554 (5527)
- **3-Amino-2-alkenoic Esters**
- Synthesis 237 (5436)
- Cyclization Reactions 160 (5423), 257, 682
- **3-Amino-2-cyano-2-alkenoic Esters**
- Synthesis 479 (5518)
- **2-Amino-3,3-dialkoxyalkanoic Esters**
- Synthesis 684
- **2-Amino-4-oximino-2-alkenoic Esters**
- Synthesis 385

- 4-Amino-3-oxoalkanoic Esters
- Synthesis 319 (5465)
- 4-Amino-2-oxo-3-alkenoic Esters
- Cyclization Reactions 385
- 4-Aminosulfonylbenzyl Carboxylates
- Synthesis 532
- 2-Arylalkanoic Esters
- Synthesis 494, 880
- Aryl Carboxylates
- Synthesis 429
- 2-Aryl-2-hydroxyalkanoic Esters
- Reactions without Cyclization 317 (5460)
- Benzoic Esters
- Synthesis 76 (5383)
- [2.2.1]Bicyclic Carboxylic Esters
- Synthesis 516
- 2,2-Bis[alkylthio]-alkanoic Esters
- Synthesis and Reactions 631 (5563)
- Bridgehead-bicycloalkyl Carboxylates
- Synthesis 54
- Chromenecarboxylic Esters
- Reduction 889
- Cyanoacetic Esters
- Cyclization Reactions 287
- Reactions without Cyclization 291
- 2-Cyano-2,4-alkadienoic Esters
- Synthesis 107
- 2-Cyanoalkanoic Esters
- Synthesis 495
- Reactions without Cyclization 559 (5539)
- 2-Cyano-2,4,8-alkatrienoic Esters
- Synthesis 107
- 2-Cyano-2-alkenoic Esters
- Synthesis 291
- Cyclization Reactions 287, 291
- Cyclopropanation 751 (5574)
- Cyclopropenecarboxylic Esters
- Synthesis 625 (5546)
- 2,2-Dialkoxyalkanoic Esters
- Synthesis 33, 631 (5563)
- Glyoxylic Esters and *O*-Derivatives
- Reactions 33
- 2-Haloalkanoic Esters
- Synthesis 627 (5550)
- 3-Haloalkanoic Esters
- Cyclization Reactions 554 (5528)
- 4-Haloalkanoic Esters
- Cyclization Reactions 554 (5528)
- 5-Haloalkanoic Esters
- Cyclization Reactions 554 (5528)
- 2-Halo-2-alkenoic Esters
- Synthesis 79 (5392)
- 2-Halo-4-alkenoic Esters
- Synthesis 627 (5550)
- 2-Halo-3-nitrilopropanoic Esters
- Reactions 479 (5518)
- 4-Halo-3-oxoalkanoic Esters
- Reactions without Cyclization 319 (5465)
- 2-Hydroxyalkanoic Esters and *O*-Derivatives
- Synthesis 239 (5444), 647
- 3-Hydroxyalkanoic Esters and *O*-Derivatives
- Synthesis 464, 556 (5531), 655, 914 (5620)
- Reactions without Cyclization 914 (5620)
- 5-Hydroxy-2-alkenoic Esters
- Synthesis 661
- 3-Hydroxy-2-nitro-2-alkenoic Esters and *O*-Derivatives
- Synthesis 675
- 2-Hydroxy-4-oxoalkanoic Esters and *O*-Derivatives
- Synthesis and Cyclization Reactions 434
- 4-Hydroxy-3-oxoalkanoic Esters and *O*-Derivatives
- Synthesis 319 (5465)
- ω-Hydroxy-3-oxoalkanoic Esters and *O*-Derivatives
- Synthesis 920 (5637)
- 2-Imino-3-oxoalkanoic Esters
- Synthesis and Cyclization Reactions 794
- Indolacetic Esters
- Synthesis 319 (5467)
- 3-Mercaptoalkanoic Esters and *S*-Derivatives
- Synthesis and Reactions 836 (5604)
- 4-Mercapto-3-oxoalkanoic Esters and *S*-Derivatives
- Synthesis 319 (5465), 621
- 2-Methylenalkanoic Esters
- Synthesis 29, 554 (5527), 750 (5570), 836 (5604), 914 (5620)
- Methylthiomethyl Carboxylates
- Synthesis 1000 (5659)
- Cleavage 999 (5657)
- Nitriloacetic Esters (Cyanoformic Esters)
- Synthesis 396 (5484)
- 3-Nitriloalkanoic Esters
- Reactions without Cyclization 107
- 5-Nitrilo-3-oxoalkanoic Esters
- Synthesis 319 (5465)
- Nitroacetic Esters
- Synthesis and Reactions 666 (review)
- 2-Nitroalkanoic Esters
- Synthesis 669
- 5-Nitroalkanoic Esters
- Synthesis 239 (5443)
- 2-Nitro-2-alkenoic Esters
- Synthesis 672, 679
- 7-Nitro-6-oxoalkanoic Esters
- Synthesis 295
- 3-Nitro-2-sulfonylalkanoic Esters
- Synthesis and Reactions 79 (5393)
- Octahydroindenecarboxylic Esters
- Synthesis 898
- 2-Oximino-3-oxoalkanoic Esters
- Cyclization Reactions 548
- 2-Oxoalkanoic Esters
- Synthesis 557 (5535), 560 (5542), 918 (5629)
- Cyclization Reactions 41, 474 (5502)
- 3-Oxoalkanoic Esters
- Synthesis 396 (5481), 622, 756 (5589)
- Cyclization Reactions 107, 189
- Reactions without Cyclization 107, 237 (5436), 481, 559 (5539), 621, 750 (5570)
- 5-Oxoalkanoic Esters
- Synthesis 239 (5442), 917 (5626)
- 4-Oxo-2-alkenoic Esters
- Synthesis 139
- 5-Oxo-3-alkenoic Esters
- Reactions without Cyclization 481
- ω-Oxo-2-alkenoic Esters
- Synthesis 279
- 3-Oxo-1-alkenyl Carboxylates
- Synthesis and Reactions 397 (5487)
- 2-Oxoalkyl Carboxylates
- Synthesis and Cleavage 956
- 2-Oxocycloalkanecarboxylic Esters
- Reactions 279
- 4-Oxo-2-sulfonylalkanoic Esters
- Synthesis and Reactions 139
- Quinolinepropenoic Esters
- Synthesis and Reactions 904
- 3-Silylalkanoic Esters
- Synthesis 398 (5491)
- Silylbenzoic Esters
- Synthesis 865
- 2-Sulfonylalkanoic Esters
- Reactions 79 (5393), 139
- 2-Sulfonyl-4-alkenoic Esters
- Synthesis and Oxidation 139
- (ω-2),ω,ω,ω-Tetrachloroalkanoic Esters
- Synthesis and Reactions 239 (5443)
- ● Carboxylic Acid Hydrazides
see also: Hydrazines
- Reactions without Cyclization 946
- ● Carboxylic Acid Imides
- *N,N*-Diacylanilines
- Synthesis and Reactions 835 (5601)
- ● Carboxylic Acids
- Synthesis 514, 646 (review), 999 (5657)
- Amidation 396 (5483)
- Esterification 479 (5519) (5521), 491, 558 (5538), 755 (5586), 757 (5590), 920 (5636), 999 (5655) (5656), 1000 (5658) (5659)
- Reactions 160 (5421), 197, 303, 394 (5475), 397 (5487), 479 (5519), 480 (5523), 704
- Reduction 13, 238 (5439)
- Acetic Acid
- Reactions 690
- 2-Acylaminoalkanoic Acids
- Cyclization Reactions 231
- 2-Acylcyclobutanecarboxylic Acids
- Synthesis 942
- 2,6-Alkadienoic Acids
- Reduction 31
- Alkanoic Acids
- Synthesis 30, 209, 560 (5542), 648
- Cyclization Reactions 211
- Reactions without Cyclization 209, 310
- 2-Alkenoic Acids
- Synthesis 656
- Reduction 30
- 3-Alkenoic Acids
- Synthesis 659
- 4-Alkenoic Acids
- Synthesis 310, 754 (5584)
- Cyclization Reactions 758 (5593)
- 6-Alkenoic Acids
- Synthesis 31
- ω-Alkenoic Acids
- Reactions without Cyclization 239 (5443)
- 2-Aminoalkanoic Acids
see also: Amino Acids and Derivatives
- Synthesis 26
- 3-Aminoalkanoic Acids
- Synthesis 51
- *o*-Aminoarenecarboxylic Acids
- Cyclization Reactions 803
- 2-Amino-3-hydroxyalkanoic Acids
- Synthesis 216
- 5-Amino-4-oxoalkanoic Acids
- Synthesis 755 (5585)
- 6-Amino-5-oxoalkanoic Acids
- Synthesis 755 (5585)
- Arenecarboxylic Acids
- Synthesis 862
- Esterification 429
- 2-Arylalkanoic Acids
- Synthesis 434
- Esterification 956
- 4-Arylalkanoic Acids
- Synthesis 310
- Benzoic Acids
- Reactions 374
- [2.2.1]Bicyclic Carboxylic Acids
- Synthesis 516
- Bis[alkylthio]-acetic Acids
- Reactions 994 (5642)
- 2,2-Bis[alkylthio]-alkanoic Acids
- Synthesis 994 (5642)
- Cyclopropanecarboxylic Acids
- Synthesis 757 (5591)
- 2,2-Diarylalkanoic Acids
- Synthesis 434
- 2,2-Dihaloalkanoic Acids
- Cyclization Reactions 400 (5496)
- 4,4-Dihalo-2-alkenoic Acids
- Synthesis and Reactions 266
- 4,4-Dihalo-3-hydroxyalkanoic Acids
- Synthesis and Reactions 266
- Dihydropyrancarboxylic Acids
- Synthesis 610
- 2,3-Dihydroxyalkanoic Acids and *O*-Derivatives
- Synthesis 27, 388
- Reactions 388
- Furancarboxylic Acids
- Synthesis 863, 868
- 3-Halo-2-alkenoic Acids
- Cyclization Reactions 755 (5587)
- 2-Hydroxyalkanoic Acids and *O*-Derivatives
- Synthesis 319 (5468)

- Reactions without Cyclization 157 (5413)
- 3-Hydroxyalkanoic Acids and *O*-Derivatives
- Synthesis 654
- Cyclization Reactions 910
- 4-Hydroxyalkanoic Acids
- Synthesis and Cyclization Reactions 160 (5422)
- 12-Hydroxyalkanoic Acids
- Cyclization Reactions 80 (5397)
- 16-Hydroxyalkanoic Acids
- Cyclization Reactions 80 (5397)
- 2-Hydroxy-2-alkenoic Acids and *O*-Derivatives
- Synthesis and Reactions without Cyclization 918 (5631)
- 2-Hydroxy-4-alkenoic Acids and *O*-Derivatives
- Cyclization Reactions 400 (5497)
- Long-Chain ω-Hydroxycarboxylic Acids
- Lactonization 759 (5597)
- 2-Mercaptoalkanoic Acids and *S*-Derivatives
- Synthesis 757 (5591)
- Nitroacetic Acid
- Reactions 676 (review)
- Norbornene-5-*endo*-acetic Acid
- Cyclization Reactions 990
- 2-Oxoalkanoic Acids
- Synthesis 560 (5542), 918 (5631)
- 3-Oxoalkanoic Acids
- Synthesis 787
- Piperidinacetic Acids
- Synthesis 51
- Quinolinepropenoic Acids
- Synthesis and Reactions 904
- (ω-2), ω,ω,ω-Tetrachloroalkanoic Acids
- Synthesis and Reactions 239 (5443)
- Thiophenecarboxylic Acids
- Synthesis 863, 868
- Trihaloacetic Acids
- Cyclization Reactions 400 (5496)
- ● Carotenoids
- Synthesis 240 (5447)
- ● Carvone
- Synthesis 736
- ● *C*-Chloro Compounds
- Reduction 4
- *o*-Bis[Chloromethyl]-arenes
- Reactions 518
- Chloroalkanes
- Synthesis 437, 488, 627
- Oxidation 996 (5649)
- Reactions 141, 275, 372, 488, 733, 952
- Reduction 75 (5379), 472
- Chloroalkenes Type C=C–Cl
- Synthesis 393 (5473), 534, 766
- Reactions 477 (5514), 534
- Chloroalkenes Type C=C–C–Cl
- Synthesis 913 (5617)
- Reactions 127, 398 (5490), 473 (5500)
- 1-Chloro-1-alkenylsilanes
- Synthesis 399 (5492)
- 2-Chloroalkyl Ethers
- Reactions 688
- Chloroalkynes Type C≡C–Cl
- Synthesis 296
- Chloroalkynes Type C≡C–C–Cl
- Reactions 372, 833
- Chloroarenes
- Synthesis 417, 606, 931
- α-Chlorocarboxylic Acid Derivatives
- Synthesis 627 (5550)
- Chloroform
- Reactions 26, 319 (5468)
- Chloroimidazolidines
- Synthesis and Reactions 580
- Chloroindazoles
- Synthesis 308
- Chloromethylarenes
- Synthesis 233 (5426), 418, 437
- Reactions 178, 706
- 2-Chloromethyl-1,3-butadiene
- Synthesis and Reactions 817
- *C*-Chloromethyl-*N*-heterocyclic Compounds
- Reactions 102
- *gem*-Dichloroalkanes
- Synthesis and Reactions 503
- 1,3-Dichloroalkanes
- Reactions 126
- 1,1-Dichloro-1-alkenes
- Reactions 622
- Dichloroalkenes Type C=C–CCl_2
- Reactions 77 (5384)
- *N*-Heterocyclic *C*-Chloro Compounds
- Synthesis 580
- Reactions 248
- *O*-Heterocyclic *C*-Chloro Compounds
- Reactions 610
- Tetrachloromethane
- Reactions 627 (5550)
- 1,1,1-Trichloro Compounds
- Reactions 26, 622
- 2,2,2-Trichloroethyl Ketones
- Synthesis 622
- Trichloromethylarenes
- Reactions 946
- ● *N*-Chloro Compounds
- *N*-Chloroamines
- Reactions 238 (5440)
- *N*-Chlorocarbamic Esters
- Reactions 316 (5457)
- *N*-Chlorocarboxamides
- Reactions 7
- 2-Chloroimino-3,3,3-trihalopropanenitriles
- Synthesis 748
- ● Chromene

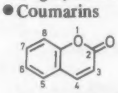


2*H*- 4*H*- 8a*H*-

- 2*H*-Chromenes

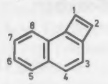
see also: Coumarins

- from Like Ring Skeletons 145, 708
- Substituent Reactions 145, 708
- 4-Chromones
- Ring Synthesis and Cleavage 901
- Anellation Reactions 337
- Oxidation of Substituents 889
- Reduction of Substituents 889
- Chromans
- Ring Synthesis 126
- 5,6,7,8-Tetrahydro-4*H*-chromenes
- Ring Synthesis 554 (5528)
- ● Coumarins

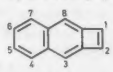


- Ring Synthesis 906
- Anellation Reactions 715, 732
- Reactions with Retention of the Ring Skeleton 715
- ● Curcumenes
- Synthesis 698
- ● Cyanamides
- Reactions 571
- ● Cyanines
- Cationic Cyanines
- Synthesis 345, 981
- Reactions 981
- Merocyanines
- Synthesis 253
- ● Cyanogen Halides
- Reactions 359
- ● Cycloalkenes, General
- Ring Synthesis 13
- 3-Silylcycloalkenes
- Synthesis 398 (5490), 399 (5493)
- ● Cyclobutabenzene

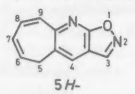
- 1,2-Dihydrocyclobutabenzenes (Benzocyclobutenes)
- Ring Synthesis 763, 854
- ● Cyclobuta[*a*]naphthalene



- 1,2-Dihydrocyclobuta[*a*]naphthalenes
- Ring Synthesis 427
- ● Cyclobuta[*b*]naphthalene

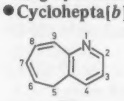


- 1,2-Dihydrocyclobuta[*b*]naphthalenes
- Ring Synthesis 427
- ● Cyclobutanes
- Cyclobutanones and Derivatives
- Ring Synthesis 554 (5528), 838 (5610)
- from Like Ring Skeletons 997 (5650)
- Functionally Substituted Cyclobutanes
- Ring Cleavage 997 (5650)
- ● Cyclobutenes
- Cyclobutenediones and Derivatives
- from Like Ring Skeletons 361
- Cyclobutenones and Derivatives
- Ring Synthesis 689
- ● 1,4-Cycloheptadienes
- Ring Synthesis 425
- ● Cyclohepta[*a*]naphthalene
- 8,9,10,11-Tetrahydro-7*H*-cyclohepta[*a*]-naphthalenes
- Ring Synthesis 291
- ● Cycloheptanes
- Cycloheptanones and Derivatives
- Ring Synthesis 554 (5528)
- Anellation Reactions 222
- ● Cyclohepta[*b*]-1,2-oxazolo[5,4-*e*]pyridine



5*H*-

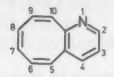
- 6,7,8,9-Tetrahydro-5*H*-cyclohepta[*b*]-1,2-oxazolo[5,4-*e*]pyridines
- Ring Synthesis 451
- ● Cyclohepta[*b*]pyridine



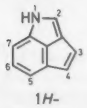
5*H*-

- 6,7,8,9-Tetrahydro-5*H*-cyclohepta[*b*]-pyridines
- Ring Synthesis 222
- ● Cycloheptatrienes
- Ring Transformation 807
- ● Cyclohexadienes
- 1,4-Cyclohexadienes
- from Like Ring Skeletons 118, 185, 374
- Reactions with Retention of the Ring Skeleton 630 (5559)
- Cyclohexadienones and Derivatives
- Anellation Reactions 323
- ● Cyclohexanes
- from Like Ring Skeletons 465
- Anellation Reactions 322
- Cyclohexanones and Derivatives
- Ring Synthesis 554 (5528)
- Anellation Reactions 222
- Aromatization 480 (5522)
- ● Cyclohexenes
- Anellation Reactions 322
- Cyclohexenones and Derivatives
- from Like Ring Skeletons 630 (5559)
- Ring Synthesis 75 (5381), 107, 318 (5464), 997 (5652)
- Aromatization 434
- *C*-Cyclohexenylheterocyclic Compounds

- Reactions 155 (5406), 157 (5414), 159 (5418)
- **Functionally Substituted Cyclohexenes**
- Ring Synthesis and Reduction 118
- **1,5-Cyclooctadienes**
- Anellation Reactions 328
- **Cyclooctanes**
- Anellation Reactions 327
- **Cyclooctanones and Derivatives**
- Anellation Reactions 222
- **Cycloocta[*b*]pyridine**

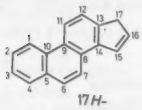


- **5,6,7,8,9,10-Hexahydrocycloocta[*b*]-pyridines**
- Ring Synthesis 222
- **Cyclooctenes**
- Anellation Reactions 327
- **Cyclopentadienes**
- **Cyclopentadienones and Derivatives**
- Reactions with Retention of the Ring Skeleton 84
- Ring Transformation 854
- **Cyclopenta[*cd*]indole**



1*H*-

- **Decahydrocyclopenta[*cd*]indoles**
- Ring Synthesis 8
- **Cyclopentanes**
- **Cyclopentanones and Derivatives**
- Anellation Reactions 222
- Ring Cleavage 279, 750 (5570)
- **Functionally Substituted Cyclopentanes**
- Ring Synthesis 554 (5528)
- **Cyclopenta[*a*]phenanthrene**

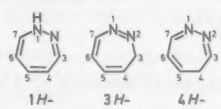


17*H*-

- **6,7,8,9,11,12,13,14,15,16-Decahydro-17*H*-cyclopenta[*a*]phenanthrenes**
- Ring Synthesis 764
- **Cyclopenta[*d*]pyridazine**

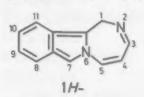
2*H*-

- Ring Synthesis 255
- **Cyclopentenes**
- **3-(1-Alkenyl)-cyclopentenes**
- from Like Ring Skeletons 114
- **Cyclopentenones and Derivatives**
- from Like Ring Skeletons 84
- Ring Synthesis 77 (5385), 160 (5423), 187, 420, 696, 835 (5600), 998 (5653)
- **Cyclopropanes**
- Ring Synthesis 6, 784
- **Cyclopropane-fused Monosaccharides**
- Synthesis 198
- ***gem*-Dihalocyclopropanes**
- Ring Cleavage 5
- **Functionally Substituted Cyclopropanes**
- from Like Ring Skeletons 757 (5591)
- Ring Cleavage 37, 156 (5410), 425, 570, 653, 657, 751 (5574)
- Ring Transformation 425
- **Cyclopropenes**
- **Cyclopropenecarboxylic Esters**
- Ring Synthesis 625 (5546)
- **Cyclopropenylium Salts**
- Reactions 9
- **Deuterium Compounds**
- **Cycloaliphatic Deuterio Compounds**
- Synthesis 118
- **Deuterioadamantanes**
- Synthesis 529
- **2-Deuterio-2-alkenenitriles**
- Synthesis 797
- **1-Deuterio-1-alkenes**
- Synthesis 767
- **Deuteriomethylene Compounds**
- Synthesis and Reactions 118
- **α-Deuterionitriles**
- Synthesis 431
- ***C*-Deuteriophenols**
- Synthesis 928
- **Dialdehydes**
- **Bis[2-formylstyryl] Ketones**
- Synthesis 201
- **1,4-Dialdehydes**
- Synthesis 557 (5534)
- ***o*-Phthaldialdehydes**
- Reactions without Cyclization 201
- **Diamines**
- **1,2-Alkanediamines**
- Synthesis 962, 980
- Cyclization Reactions 46, 980
- **1,3-Alkanediamines**
- Cyclization Reactions 46, 624
- ***N*-(Aminoalkyl)-*N*-heterocyclic Compounds**
- Synthesis 381
- Cyclization Reactions 381
- ***o*-Aminodiarylamines**
- Cyclization Reactions 589
- ***o*-Diaminoarenes**
- Cyclization Reactions 337
- **Diazenes (Azo Compounds)**
- Reduction 18
- **2-Arylazo-2,3-dihydrofurans**
- Synthesis and Reactions 284, 791
- **Diaryldiazenes**
- Synthesis 413
- **Phosphoryldiazenes**
- Reactions 96
- **1,2-Diazepine**



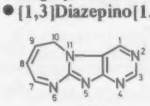
1*H*- 3*H*- 4*H*-

- from Like Ring Skeletons 130
- **[1,4]Diazepino[2,1-*a*]isoindole**



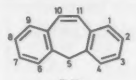
1*H*-

- **2,3,4,5,7,11b-Hexahydro-1*H*-[1,4]diazepino[2,1-*a*]isoindoles**
- Ring Synthesis 381
- **[1,3]Diazepino[1,2-*f*]purine**



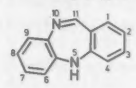
10*H*-

- **1,2,3,4,6,7,8,9-Octahydro-10*H*-[1,3]diazepino[1,2-*f*]purines**
- Ring Synthesis 581
- **Diazo Compounds**
- **Aryldiazomethanes**
- Synthesis and Reactions 532
- **Diazoalkanes**
- Reactions 854, 893
- **α-Diazocarboxylic Esters**
- Synthesis 805
- Reactions 625 (5546), 854
- **1-Diazo-2-hydroxyalkylsilanes**
- Synthesis and Reactions 641
- **α-Diazoketones**
- Synthesis 805
- Reactions 164
- **2-Diazo-3-oxoalkyltriarylphosphonium Salts**
- Synthesis 805
- ***N*-Heterocyclic *C*-Diazo Compounds**
- Reduction 194
- **Diazonium Salts**
- **Arenediazonium Salts**
- Synthesis 285
- Reactions 21, 857, 909
- Reduction 18
- **Dibenzo[*a,d*]cycloheptene**

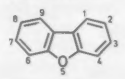


5*H*-

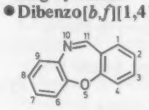
- **10,11-Dihydro-5*H*-dibenzo[*a,d*]cycloheptenes**
- Ring Synthesis 934
- **Dibenzo[*b,e*][1,4]diazepine**



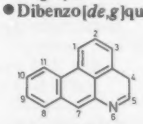
- Ring Synthesis 589
- **Dibenzofuran**



- **Dibenzofurans**
- Anellation Reactions 587
- **1,2,3,4-Tetrahydrodibenzofurans**
- Ring Synthesis 122
- **3,4,4a,9b-Tetrahydrodibenzofurans**
- Ring Synthesis 412
- **1,2,3,4,4a,9b-Hexahydrodibenzofurans**
- Ring Synthesis 892
- **Dibenzo[*b,f*][1,4]oxazepine**

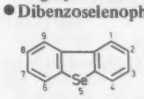


- Ring Synthesis 589
- **Dibenzo[*de,g*]quinoline**

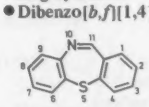


4*H*-

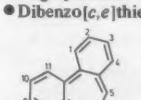
- **5,6,6a,7-Tetrahydro-4*H*-dibenzo[*de,g*]quinolines**
- Ring Synthesis 749 (5569)
- **Dibenzoselenophene**



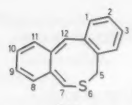
- **1,2,3,4-Tetrahydrodibenzoselenophenes**
- Ring Synthesis 122
- **Dibenzo[*b,f*][1,4]thiazepine**



- Ring Synthesis 589
- **Dibenzo[*c,e*]thiepin**

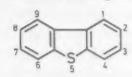


- **5,7-Dihydrodibenzo[*c,e*]thiepins**
- Ring Synthesis 1000 (5660)
- **Dibenzo[*c,f*]thiocin**

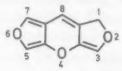


5*H*-

- 7,12-Dihydro-5*H*-dibenzothiocins
- Ring Synthesis and Transformation 934
● Dibenzothiophene

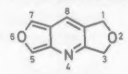


- 1,2,3,4-Tetrahydrodibenzothiophenes
- Ring Synthesis 122
● Dicarboxylic Acid Amides
- 4-Octenediamides
- Synthesis and Cyclization Reactions 68
● Dicarboxylic Acid Anhydrides
- Alkanedioic Anhydrides
- Reactions 755 (5585)
- Maleic Anhydrides
- Reactions 75 (5381), 271, 457
- Reduction 2
- 7-Oxabicyclo[2.2.1]-2-heptene-5,6-dicarboxylic Anhydrides
- Reactions 608
- 1,2,3,4-Tetrahydrophthalic Anhydrides
- Synthesis 75 (5381)
● Dicarboxylic Acid Chlorides
- Alkanedioyl Dichlorides
- Reactions without Cyclization 204
- Fumaroyl Chloride
- Cyclization Reactions 118
● Dicarboxylic Acid Esters
- Acetylenedicarboxylic Esters
- Cyclization Reactions 76 (5383), 345, 938
- Arene-1,2-bis-acetic Esters
- Synthesis 317 (5460)
- 2,ω-Bis[methylene]-alkanedioic Esters
- Synthesis 29
- Cyclopropane-1,1-dicarboxylic Esters
- Synthesis 156 (5410)
- 2,3-Dihydroxybutanedioic Esters
- Cyclization Reactions 351
- 2,4-Dinitropentanedioic Esters
- Synthesis 672
- 1,3-Dioxole-4,5-dicarboxylic Esters
- Reduction 351
- Fumaric Esters
- Cyclization Reactions 270
- Reduction 2
- Homophthalic Esters
- Synthesis 76 (5383)
- Maleic Esters
- Cyclization Reactions 270
- Reduction 2
- Octatrienedicarboxylic Esters
- Synthesis 240 (5447)
- 2-Oxopentanedioic Esters
- Synthesis and Reactions (with and without Cyclization) 948
- 2,3-Pentadienedioic Esters
- Cyclization Reactions 76 (5383)
- Pentanedioic Esters
- Synthesis 917 (5626)
- Phthalic Esters
- Synthesis 76 (5383)
● Dicarboxylic Acid Imides
- 2-Phthalimidomethylbutadiene
- Synthesis 818
● Dicarboxylic Acid Monoamides
- Maleic Monoamides
- Synthesis 457
● Dicarboxylic Acid Monoester Amides
- 2-Iminopentanedioic 5-Ester 1-Amides
- Synthesis and Reactions 948
- 2-Oxopentanedioic 5-Ester 1-Amides
- Synthesis and Reactions 948
- Pentanedioic 5-Ester 1-Amides
- Synthesis 917 (5626)
● Dicarboxylic Acid Monoesters
- 2-Alkenylidenemalonic Monoesters
- Synthesis 918 (5630)
- 1,4-Dioic Monoesters
- Synthesis and Reactions 608
- Malonic Monoesters
- Reactions 756 (5589)
● Dicarboxylic Acids
- Acetylenedicarboxylic Acid
- Reduction 2
- Cyclohexane-1,2-dicarboxylic Acids
- Synthesis 118
- Cyclohexene-4,5-dicarboxylic Acids
- Synthesis and Reactions 118
- Fumaric Acid
- Reduction 2, 31
- 3-Haloalkanedioic Acids
- Synthesis 239 (5443)
- Maleic Acid
- Reduction 2, 31
- Pyrrolidine-2,5-dicarboxylic Acids
- Synthesis 150
● Dienes (conjugated)
- Synthesis 118, 313 (5449), 475 (5507), 768
- Cyclization Reactions 43, 118, 270
- Reactions without Cyclization 310
- 1,3-Alkadienes
- Synthesis 474 (5503)
- Functionally Substituted Dienes
- Synthesis 252
- Cyclization Reactions 41, 75 (5381), 76 (5383), 149
- Reactions without Cyclization 153 (5401)
- Isoprene
- Chlorination 817
- Steroidal Dienes
- Isomerization 265
● Dienols and Derivatives
- Dienol Carboxylates
- Reactions 913 (5619)
● Difuro[3,4-*b*;3′,4′-*e*]pyran



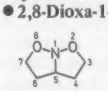
1*H*-

- 3,5,7,8-Tetrahydro-1*H*-difuro[3,4-*b*;3′,4′-*e*]-pyrans
- Ring Synthesis and Transformation 808
● Difuro[3,4-*b*;3′,4′-*e*]pyridine



1*H*,3*H*-

- 5,7-Dihydro-1*H*,3*H*-difuro[3,4-*b*;3′,4′-*e*]pyridines
- Synthesis and Ring Cleavage 808
- 4,5,7,8-Tetrahydro-1*H*,3*H*-difuro-[3,4-*b*;3′,4′-*e*]pyridines
- Ring Synthesis and Oxidation 808
● 1,3-Diketone-Boron Difluoride Complexes
- Synthesis and Reactions 548
● Diketones
- 2-Acyl-3-cyclohexenones
- Synthesis and Reactions 185
- 2-Alkene-1,4-diones
- Synthesis 318 (5463)
- Reduction 3
- 2-Alkene-1,5-diones
- Cyclization Reactions 437
- 2-Alkene-4,7-diones
- Cyclization Reactions 187
- 5-Alkoxy-1,4-diones
- Synthesis 997 (5650)
- Bis[2-oxoalkyl] Sulfides
- Cyclization Reactions 46
- Cyclic 1,4-Diketones
- Reduction 604, 614
- 1,3-Cycloalkanediones
- Reactions 518
- 1,4-Cyclohexanediones
- Synthesis and Reactions 604
- Cyclohexene-1,4-diones
- Synthesis 807
- 2,3-Dihydroxy-1,4-diones
- Synthesis 557 (5535)
- *vic*-Diketones
- Synthesis 557 (5535), 631 (5563), 637
- 1,3-Diketones
- Synthesis 247, 349, 548
- Cyclization Reactions 189, 548, 682
- Reactions without Cyclization 621
- 1,4-Diketones
- Synthesis 187, 553 (5526), 631 (5562), 998 (5653)
- Cyclization Reactions 187, 553 (5526), 687
- 1,6-Dioxo-2,4-alkadienes
- Synthesis 153 (5401)
- 2-Halo-2-alkene-1,4-diones
- Reduction 3
- 4-Mercapto-1,3-diketones and *S*-Derivatives
- Synthesis 621
- Thio-bis[methyl ketones]
- Cyclization Reactions 624
● Dinitriles
- 2,(ω-1)-Dioxoalkanedinitriles
- Synthesis 204
- 2-Hexenedinitriles
- Synthesis 797
- Phthalodinitriles
- Cyclization Reactions 865
● Dinucleoside Phosphates
- Synthesis 138
● Diols (including *O*-Protected Derivatives)
- Etherification 123
- Oxidation 404
- 1,3-Alkadiene-2,4-diols
- Cyclization Reactions 149
- 2-Alkyne-1,4-diols
- Synthesis and Cyclization Reactions 836 (5603)
- 2-Alkyne-1,6-diols
- Synthesis 611
- *o*-Bis[hydroxymethyl]-arenes
- Reactions without Cyclization 518
- 2,6-Bis[hydroxymethyl]-pyridines
- Synthesis 808
- *vic*-Diols
- Synthesis 11, 13, 316 (5456), 482
- Cyclization Reactions 627 (5552)
- Dehydroxylation 813
- Reactions without Cyclization 154 (5402), 637
- 1,3-Diols containing a 1,3-Dithiane Group
- Oxidation 526
- 1,4-Diols
- Synthesis 351, 608
- *o*-(1-Hydroxyalkyl)-phenols
- Synthesis 366, 824
● 2,8-Dioxa-1-azabicyclo[3.3.0]octane



- Ring Synthesis 680
● 1,3,2-Dioxaphosphole

- *P*V-1,3,2-Dioxaphospholanes
- from Like Ring Skeletons 21
- 6,7-Dioxatricyclo[3.2.2.0^{2,4}]-8-nonenes
- Ring Transformation 807
● 1,3-Dioxepin

- 4,7-Dihydro-1,3-dioxepins
- Ring Synthesis 975
- 1,3-Dioxepans
- Ring Synthesis 975
● 1,3-Dioxin

- 1,3-Dioxans
- Ring Synthesis 132, 219, 910
- Ring Cleavage 396 (5481)
- Substitution 396 (5481)
● 1,4-Dioxin

- 1,4-Dioxanium Betaines
- Synthesis 699
- 1,4-Dioxans
- Ring Synthesis 87
- Reactions with Retention of the Ring Skeleton 699
● 1,3-Dioxole

- 1,3-Dioxolanes
- Ring Synthesis 154 (5402), 351, 724
- Ring Cleavage 154 (5402), 724
- Ring Transformation 752 (5578)
● Diphenols
- Oxidation 411
- Catechols
- Reactions 695
● Diselenides
- Diaryl Diselenides
- Reactions 300
● Disulfides
- Synthesis 320 (5470), 721
- Reactions 1300 (5660)
- Alkyl Thioacyl Disulfides
- Synthesis 971
- Dialkyl Disulfides
- Synthesis 1000 (5660)
- Diaryl Disulfides
- Synthesis 223
- Reactions 559 (5539), 621
● 1,3,2-Dithiaborole

- 1,3,2-Dithiaborolanes
- Ring Transformation 920 (5635)
● 1,3-Dithiin

- 1,3-Dithians
- Ring Synthesis 184
- 2-Substitution 994 (5642)
● 1,4-Dithiin

- Dihydro-1,4-dithiins
- Ring Synthesis 47
● Dithiocarbamic Acid Esters
- Reactions 153 (5400)
- 2-Oxoalkyl Dithiocarbamates
- Cyclization Reactions 182
● Dithiocarbonic Acid Esters
- Alkali Metal *O*-Alkyl Dithiocarbonates
- Reactions 178
- *O,S*-Dialkyl Dithiocarbonates
- Synthesis 80 (5395)
- Reactions 178, 890
- *S,S*-Dialkyl Dithiocarbonates
- Synthesis 184
● Dithiocarboxylic Acid Esters
- Synthesis 396 (5482), 432
- Alkanedithioic Esters
- Reactions 455, 560 (5542)
- 3-Hydroxyalkanedithioic Esters
- Synthesis and Reactions 560 (5542)
- 2-Oxoalkyl Dithiocarboxylates
- Cyclization Reactions 183
● Dithiocarboxylic Acid Ester Thioamides
- Pentanedioic 1-Ester 5-Thioamides
- Synthesis and Reactions 917 (5626)
● Dithiocarboxylic Acids
- Alkanedithioic Acids
- Reactions 397 (5485)
● Dithiomalonic Acid Diamides
- Synthesis 248
● 1,2-Dithiole

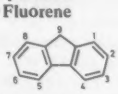
- 1,2-Dithiolium Salts
- Ring Synthesis 256
● 1,3-Dithiole

- 1,3-Dithiolium Salts
- Ring Synthesis 183
- 1,3-Dithiolanes
- Ring Synthesis 920 (5635)
- Ring Cleavage 273, 720
● Dithiols
- Alkane-1,3-dithiols
- Reactions 184

● Enamines
- Synthesis 127, 237 (5436), 370, 376, 717, 741, 830
- Cyclization Reactions 122, 305
- Reactions without Cyclization 305, 434, 716, 915 (5623)
● Enediols (including *O*-Derivatives)
- Enediol Silyl Ethers
- Reactions 997 (5650)
● Enols (including *O*-Derivatives)
- Enol Carbonates
- Synthesis 320 (5469)
- Enol Carboxylates
- Reactions 154 (5404), 505, 507
- Enol Silyl Ethers
- Synthesis 34, 505, 632 (5566), 730, 736, 914 (5621)
- Reactions 237 (5438), 315 (5455), 738, 914 (5621)
● Enynes (conjugated)
- Synthesis 373, 438, 829
- Reactions without Cyclization 158 (5417)
● Epimino Compounds
- Reactions 592
● Epoxides (Epoxy Compounds)
- Synthesis 399 (5494), 467
- Deoxygenation 10
- Reactions 315 (5453), 482
- 1,3-Diene Monoepoxides (Vinyloxiranes)
- Reactions 62, 508
- Epoxycycloalkanes
- Synthesis 410
- 1-Silylepoxides
- Reduction 395 (5478)
● 2,10a-Epoxymethanophenanthrene

1*H*,3*H*-
- 9,10-Dihydro-1*H*,3*H*,-2,10a-epoxymethanophenanthrenes
- Ring Synthesis 376
● Ethers
- Reactions 740
- 1,2-Alkadienyl Ethers
- Reactions 318 (5463)
- 1,3-Alkadienyl Ethers
- Cyclization Reactions 41
- 2-Alkenyl Arylthiovinyl Ethers
- Synthesis and Reactions 997 (5651)
- 2-Alkenyl 1,3-Benzothiazol-2-yl Ethers
- Synthesis and Reactions 886
- 1-Alkenyl-Ethers (Enol Ethers)
- Synthesis 388, 505, 688, 898, 916 (5625)
- Reactions 87, 898, 910, 982, 993 (5639)
- 2-Alkenyl Ethers (Allyl Ethers)
- Synthesis 203
- Reactions 203, 473 (5503)
- 3-Alkenyl Ethers
- Synthesis 473 (5500)
- 2-Alkenyl Pyridyl Ethers
- Reactions 476 (5508)
- 1-Alken-3-ynyl Ethers
- Reactions 158 (5417)
- Alkyl Aryl Ethers
- Synthesis 76 (5383), 177, 920 (5636)
- Reactions 993 (5640)
- Alkyl Hydroxyaryl Ethers
- Synthesis 989
- 1-Alkylthioalkyl Ethers
- Synthesis and Reactions 398 (5489)
- Alkyl Trifluoroethyl Ethers
- Synthesis 819
- 1-Alkynyl Ethers
- Oxidation 557 (5535)
- 2-Alkynyl Ethers
- Synthesis 503
- *o*-Aminodiaryl Ethers
- Reactions 589
- Benzyl Ethers
- Reactions 556 (5533)
- Bridgehead-alkoxybicycloalkanes
- Synthesis 54
- Chloromethyl Ethers
- Synthesis 970
- Crown Ethers
- Synthesis 458
- Dialkyl Ethers
- Synthesis 14, 393 (5474), 398 (5489), 428, 498
- Diol Ethers
- Synthesis 123
- 3-Halo-1-alken-2-yl Ethers
- Reactions 553 (5526)
- 1-Haloalkyl Ethers
- Reactions 642
- 2-Haloalkyl Ethers
- Synthesis 67
- Reactions 688

● Ferrocenes
- Reactions 303
- Silylferrocenes
- Synthesis 870
● Fluorene

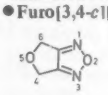


- Fluorenes
- from Like Ring Skeletons 987
- Alkylation 616
- 1,4,4a,9a-Tetrahydrofluorenes
- Ring Synthesis 987
- 3,4,4a,9a-Tetrahydrofluorenes
- Ring Synthesis 987
- 1,2,3,4,4a,9a-Hexahydrofluorenes
- from Like Ring Skeletons 987
● *C*-Fluoro Compounds
- Bridgehead-fluorobicycloalkanes
- Synthesis 53

- 1,1-Difluoro-1-alkenes
- Synthesis and Reactions 918 (5631)
- Difluorohaloalkanesulfonic Acid Derivatives
- Synthesis 972
- Fluoroalkanes
- Synthesis 993 (5638)
- Reactions 275
- Reduction 75 (5379)
- Fluoropyridinium Salts
- Reactions 317 (5461)
● Fulvenes
- 6-Aminopentafulvenes
- Reactions 981
- Pentafulvenes
- Reactions 516
● Furan

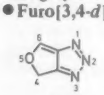
- Furans
- From Like Ring Skeletons 146
- Oxidation 383
- Ring Cleavage 557 (5535)
- Ring Transformation 383
- 2,3-Dihydrofurans
- Ring Cleavage 791
- Ring Transformation 284
- 2,5-Dihydrofurans
- Ring Synthesis 608, 744
- Tetrahydrofurans
- Ring Synthesis 474 (5502), 554 (5528), 891
● Furazan

- Furazan 2-Oxides (Furoxans)
- Ring Synthesis 682, 684
- Furazans
- Ring Synthesis 977
- Anellation Reactions 687
● Furo[3,4-*c*][1,2,5]oxadiazole



4*H*,6*H*-

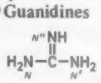
- Ring Synthesis and Cleavage 977
● Furo[3,4-*d*]-1,2,3-triazole



4*H*-

- 2,6-Dihydro-4*H*-furo[3,4-*d*]-1,2,3-triazoles
- Ring Synthesis and Cleavage 977

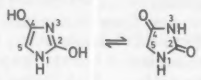
● Glycerides
- 1,2-Diglycerides
- Synthesis 939
● Glycerol 1-Ethers
- Esterification 939
● Glycosides
see also: Monosaccharides and Derivatives
- 1-Alkenyl Glycosides
- Synthesis and Reactions 711
- Nitrophenyl Glycosides
- Synthesis 823
- Oxoalkyl Glycosides
- Synthesis and Reactions 711
● Guanidines



- Reactions without Cyclization 215
● Guanidinium Salts
- Reactions 344

● Hexamethylenetetramine (Urotropine)

- Ring Synthesis 161
- Review of Reactions 161
- Urotropinium Salts
- Synthesis and Reactions 162
● Homobenzoquinones
- Synthesis 807
● Hydantoins

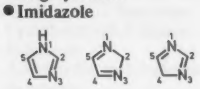


- Synthesis 794
● Hydrazinedithiocarboxylic Acid Esters
- Reactions 919 (5633)
● Hydrazines
- Cyclization Reactions 681, 803
- *N*-Alkyl-*N'*-sulfonylhydrazines
- Synthesis 789
- *N*-Amino-*N*-heterocyclic Compounds
- Synthesis 804
- Arylhydrazines
- Synthesis 18
● Hydrazones
- Ketone Hydrazones
- Oxidation 413
- 1-Nitroaldehyde Hydrazones
- Synthesis 380, 909
- Cyclization Reactions 380, 909
- Sulfonylhydrazones
- Synthesis 614
- Reactions without Cyclization 44, 234 (5427), 235 (5432), 395 (5478)
- Reduction 614, 789, 995 (5645)
- Regeneration of the Carbonyl Compound 113, 207
- 1,2,4-Triketone 1-Hydrazones
- Synthesis and Cyclization Reactions 791
● Hydrazonic Acid Esters
- *N*-Acylhydrazonic Esters
- Synthesis and Cyclization Reactions 946
- *N*-Alkoxycarbonylhydrazonic Esters
- Synthesis and Cyclization Reactions 946
● Hydrazonic Acid Halides
- Hydrazonoyl Chlorides
- Reactions 299
● Hydrocarbons, General
- Synthesis 10, 77 (5386) (5387), 995 (5645)
● Hydroquinone Derivatives
- Hydroquinone Diethers
- Synthesis 603, 605
- Hydroquinone Monoethers
- Synthesis 521, 925, 988
● Hydroquinones
- Synthesis 604
● Hydroximic Acid Azides
- Synthesis and Reactions 102
● Hydroximic Acid Halides
- Synthesis and Reactions 102
● Hydroxylamines
- Alkylhydroxylamines
- Reactions 751 (5575), 760 (5599)
- Arylhydroxylamines
- Synthesis 76 (5384)
- Oxidation 474
- *N*-Substituted Hydroxylamines
- Oxidation 414
- *O*-Sulfonylhydroxylamines
- Reactions 629 (5558)

● Imidazo[4,3-*a*]isoindole

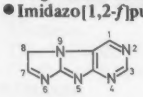
1*H*-

- 2,3,5,9b-Tetrahydro-1*H*-imidazo-[4,3-*a*]isoindoles
- Ring Synthesis 381
● Imidazole



2*H*- 4*H*-

- Imidazoles
- Ring Synthesis 215, 385
- 2-Oxo-2*H*-imidazoles
- Ring Synthesis 748
- 2-Oxo-2,3-dihydroimidazoles
- from Like Ring Skeletons 580
- 4,5-Dihydroimidazoles
- Ring Synthesis 595
- Ring Cleavage 80 (5398)
- Imidazolidines
- Ring Synthesis 172, 593, 794
- Reactions with Retention of the Ring Skeleton 580
- Ring Transformation 174
● Imidazo[1,2-*f*]purine

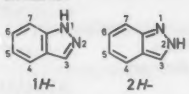


8*H*-

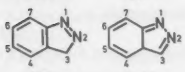
- 1,2,3,4,6,7-Hexahydro-8*H*-imidazo[1,2-*f*]-purines
- Ring Synthesis 581
● Imines
- Synthesis 238 (5440)
- Reactions without Cyclization 464
- Aldimines
- Synthesis 544
- Cyclization Reactions 211, 544
- Reactions without Cyclization 92
- Reduction 30
- 4-Alkenimines
- Synthesis 464
- *N*-(1-Alkenyl)-imines
- Synthesis and Reactions 639
- 1,3-Diimines
- Cyclization Reactions 345, 346
- Formaldehyde Imines
- Synthesis 167
- Ketimines
- Reactions without Cyclization 553 (5526), 739
- Quinone Diimines
- Reactions 92
- 1,2,3-Triketone 2-Imines
- Synthesis and Cyclization Reactions 794
● Iminium Salts
- 1,2-Alkanediylidene-bis-iminium Salts
- Synthesis and Reactions 728
- 3-Amino-1-alkeniminium Salts
- Synthesis and Reactions 213
- 3-Amino-2-alkeniminium Salts (Vinylogous Amidinium Salts, Vinamidinium Salts)
- Cyclization Reactions 385
- 3-Amino-3-chloro-2-propeniminium Salts
- Synthesis 244
- 3-Amino-2-propyniminium Salts
- Synthesis 251
- 1-Chloroalkaniminium Chlorides
- Reactions 243
- 3-Chloro-2-alkeniminium Salts
- Synthesis 241
- Reactions (Review) 241
- *C*-Iminioheterocyclic Compounds
- Synthesis 182
● *as*-Indazene

- 1,2,3,6,7,8-Hexahydro-*as*-indacenes
- Ring Synthesis 291

● **Indazole**



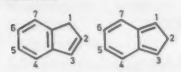
1*H*- 2*H*-



3*H*- 3a*H*-

- 1*H*-Indazoles
- from Like Ring Skeletons 194
- 2*H*-Indazoles
- Ring Synthesis 308
- 3*H*-Indazoles
- Reactions with Retention of the Ring Skeleton 194

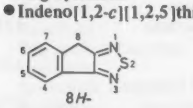
● **Indene**



2*H*-

- Indenes
- Ring Synthesis 254
- Anellation Reactions 987
- Indanes
- Ring Synthesis 854
- 2,3,3a,4,5,6-Hexahydroindenes
- Ring Synthesis 836 (5603)
- 2,4,5,6,7,7a-Hexahydroindenes
- Ring Synthesis 553 (5526), 752 (5578)
- Octahydroindenes
- Ring Synthesis 781, 898

● **Indeno[1,2-*c*][1,2,5]thiadiazole**



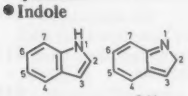
8*H*-

- Ring Synthesis 524

● **Indigoidin and Relatives**

- Synthesis 948

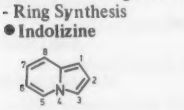
● **Indole**



2*H*- 3*H*-

- Indoles
- from Like Ring Skeletons 305, 319 (5467)
- Ring Synthesis 728
- *N*-Acylation 387
- *N*-Alkylation 617
- Anellation Reactions 151
- Reactions with Retention of the Ring Skeleton 136, 276, 319 (5467)
- 2,3-Dihydroindoles
- from Like Ring Skeletons 276
- Ring Synthesis 305

● **Indolizine**

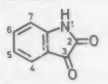


- Indolizines
- Ring Synthesis 746
- Octahydroindolizines
- Ring Synthesis 106

● ***C*-Iodo Compounds**

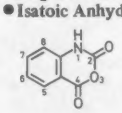
- Synthesis 995 (5644)
- Reactions 234 (5428)
- Reduction 4
- *vic*-Aryloxyiodoalkanes
- Synthesis 67
- *vic*-Diiodoalkanes
- Reactions 994 (5641)
- 1,3-Diiodoalkanes
- Cyclization Reactions 6
- Diiodomethane
- Reactions 317 (5459)
- α-Iodoaldehydes and -ketones
- Synthesis 154 (5404)
- Iodoalkanes
- Synthesis 379, 740, 952
- Reactions 79 (5391), 156 (5409), 178, 275, 488, 503, 556 (5531)
- Reduction 75 (5379)
- (n+1)-Iodo-n-alkanolides
- Synthesis 400 (5497)
- Iodoalkenes Type C=C–J
- Synthesis 235 (5431), 393 (5473), 501 [cf. 1035], 767, 952, 994 (5641)
- Iodoalkenes Type C=C–C–J
- Synthesis 740
- Iodoalkenes Type C=C–C–C–J
- Synthesis 37
- 1-Iodo-1-alkenylsilanes
- Synthesis 399 (5492)
- Iodoalkynes Type C≡C–J
- Reactions 829
- Iodoarenes
- Synthesis 763, 856, 932
- Reactions 76 (5382)
- Iodomethyl Compounds
- Synthesis and Reactions 272
- Triiodoimidazole
- Synthesis and Reactions 813

● **Isatins**



- Ring Transformation 176

● **Isatoic Anhydrides**



see: 3,1-Benzoxazine

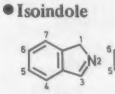
● **Isocyanates**

- Reactions without Cyclization 94, 104
- Aryl Isocyanates
- Synthesis 278
- Cyclization Reactions 794
- Dichlorophosphonyl Isocyanate
- Reactions 269
- 1-Haloalkyl Isocyanates
- Reactions without Cyclization 739
- Isocyanatophenols
- Synthesis 277
- Sulfonyl Isocyanates
- Reactions without Cyclization 293

● **Isocyanides**

- Reactions without Cyclization 99
- Alkyl Isocyanides
- Reactions without Cyclization 197, 647
- Aryl Isocyanides
- Reactions without Cyclization 95
- α-Isocyanocarboxylic Acid Derivatives
- Cyclization Reactions 216
- Sulfonylmethyl Isocyanides
- Reactions without Cyclization 648

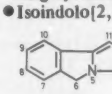
● **Isoindole**



1*H*-

- 1*H*-Isoindoles
- Ring Synthesis 865
- 1,3-Dihydroisoindoles
- Ring Synthesis 172

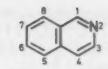
● **Isoindolo[2,1-*a*]indole**



6*H*-

- Ring Synthesis 151

● **Isoquinoline**



- Isoquinolines
- Ring Synthesis 172
- 1,2-Dihydroisoquinolines
- from Like Ring Skeletons 55
- 3,4-Dihydroisoquinolines
- Ring Synthesis 195
- Anellation Reactions 211
- Reduction 195
- 1,2,3,4-Tetrahydroisoquinolines
- from Like Ring Skeletons 195
- Anellation Reactions 195

● **Isoselenocyanates**

- Benzyl Isoselenocyanates
- Synthesis 705

● **Isothiocyanates**

- Cyclization Reactions 297
- Reactions without Cyclization 94
- Aryl Isothiocyanates
- Cyclization Reactions 35

● **Jasmone and Relatives**

- Synthesis 15, 998 (5653)

● **Ketene Derivatives**

- Ketene *S,S*-Acetal *S*-Oxides
- Synthesis 880
- Reactions 648, 880
- Ketene *O,O*-Acetals
- Reactions 675
- Ketene *S,S*-Acetals
- Synthesis 397 (5485), 640, 919 (5632) (5633)
- Reactions 640, 648
- Ketene *O*-Alkyl *O*-Silyl Acetals
- Synthesis 836 (5604)
- Reactions 655, 836 (5604), 914 (5620)
- Ketene *S*-Alkyl *S*-Silyl Acetals
- Synthesis 455
- Ketene Aminals
- Synthesis 344
- Ketene *S*-Silyl *N,S*-Acetals
- Synthesis 455
- Ketene *S*-Silyl *O,S*-Acetals
- Synthesis 455
- Ketene *Se*-Silyl *N,Se*-Acetals
- Synthesis 455
- Vinylketene *O,O*-Acetals
- Cyclization Reactions 75 (5381), 76 (5383)

● **Ketenes**

- Reactions without Cyclization 89, 654
- Dihaloketenes
- Cyclization Reactions 689, 838 (5610)
- Silylketenes
- Synthesis 740
- Reactions without Cyclization 89

● **Ketones**

- Synthesis 15, 16, 75 (5380) (5381), 79 (5391), 157 (5412) (5413), 159 (5420), 207, 238 (5441), 273, 317 (5461), 357, 402, 477 (5511) (5513), 478 (5517), 486, 492, 496, 557 (5536), 560 (5542), 633 (review), 703, 720, 753 (5581), 815, 877, 968, 996 (5649), 998 (5654)
- Cyclization Reactions 41, 287, 395 (5480), 400 (5495), 440, 495, 724, 732, 920 (5635), 975
- Epoxide Formation 395 (5480), 400 (5495)
- Reactions without Cyclization 79 (5392), 88, 156 (5409), 158 (5417), 160 (5422), 192, 201, 235 (5432), 240 (5446), 313 (5450), 317 (5459), 388, 397 (5488), 555 (5529), 556 (5531), 610, 635, 884, 890, 918 (5631)
- Reduction 12, 77 (5386) (5387), 490, 995 (5645)
- 3-Acetyl-1,4-cyclohexadienes
- Synthesis and Reactions 185

- 1,3-Alkadienyl Ketones
- Synthesis 753 (5579), 913 (5619)
- Reactions without Cyclization 698
- 1-Alkenyl 2-Alkenyl Ketones
- Synthesis 776
- 1-Alkenyl 1-Hydroxyalkyl Ketones and *O*-Derivatives
- Synthesis 156 (5408)
- 1-Alkenyl Ketones
- Synthesis 78 (5390), 157 (5414), 158 (5415), 318 (5462) (5463), 473 (5498), 474 (5501), 553 (5525), 635, 643, 660, 768, 913 (5618), 914 (5620) (5621), 996 (5648)
- Cyclization Reactions 75 (5381), 122
- Reactions without Cyclization 83, 187, 239 (5442), 301, 398 (5491), 447, 538, 626 (5549), 754 (5583), 913 (5619)
- Reduction 30, 628 (5554)
- 2-Alkenyl Ketones
- Synthesis 447, 626 (5549)
- 4-Alkenyl Ketones
- Synthesis 394 (5477), 447, 641
- Alkyl Aryl Ketones
- Synthesis 60, 144, 708, 861
- Cyclization Reactions 117
- Oxidation 494
- Reactions without Cyclization 65, 117, 185, 880
- Alkyl *o*-Hydroxyaryl Ketones
- Cyclization Reactions 901
- Alkyl Ketones, General
- Synthesis 78 (5390)
- Cyclization Reactions 219
- Reactions without Cyclization 243
- *sec*-Alkyl Ketones
- Synthesis 78 (5388)
- 3-(1-Alkynyl)-cycloalkanones
- Synthesis 313 (5448)
- 1-Alkynyl Ketones
- Reactions without Cyclization 89
- 3-Alkynyl Ketones
- Synthesis 313 (5448)
- 4-Alkynyl Ketones
- Synthesis 154 (5403)
- 2-Amino-1-alkenyl Ketones
- Synthesis 237 (5436), 247, 553 (5525), 901
- Reactions without Cyclization 242, 553 (5525), 941
- Reduction 913 (5618)
- 1-Aminoalkyl Ketones
- Synthesis 163
- *o*-Aminoaryl Ketones
- Cyclization Reactions 121
- Aminoethynyl Ketones
- Reactions without Cyclization 396 (5483), 397 (5487)
- Azulenyl Ketones
- Synthesis 981
- Bicyclic Ketones
- Reactions 382
- Bis[1-alkenyl] Ketones
- Synthesis 201, 800
- Reactions without Cyclization 83
- Bis[dihydropyranyl] Ketones
- Synthesis 610
- Bis[1-mercaptoalkyl] Ketones
- Cyclization Reactions 184
- Cycloalkanones
- Synthesis 60, 395 (5478), 554 (5528), 752 (5578)
- Cyclization Reactions 755 (5587)
- Homologation 968
- Reactions 35, 65, 291, 395 (5478), 537, 836 (5603)
- 2-Cycloalkenones
- Synthesis 75 (5381), 77 (5385), 107, 187, 237 (5438), 996 (5648)
- Anellation Reactions 752 (5578)
- Reduction 3
- Reductive Substitution 313 (5448), 917 (5627)
- 3-Cycloalkenones
- Synthesis 553 (5526)
- Cyclobutenones
- Synthesis 689
- 2-Cyclohexenones
- Synthesis 185, 318 (5464), 630 (5559), 736, 997 (5652)
- 3-Cyclohexenones
- Synthesis 185
- 2-Cyclopentenones
- Synthesis 160 (5423), 835 (5600)
- Cyclopropyl Ketones
- Synthesis 570, 783
- Reactions involving Ring Cleavage 37
- Dialkyl Ketones
- Synthesis 14, 30, 158 (5416), 209, 395 (5478), 420, 477 (5514), 555 (5529), 557 (5534), 558 (5537), 630 (5561), 637, 642, 914 (5621), 919 (5634), 998 (5653)
- Cyclization Reactions 554 (5528)
- Reactions without Cyclization 77 (5385), 395 (5478), 447, 464, 548
- Diaryl Ketones
- Synthesis 861
- Reduction 629 (5557)
- Dihydropyranyl Ketones
- Synthesis and Reactions 610
- 3-(1,3-Dithian-2-yl)-cycloalkanones
- Synthesis 917 (5627)
- Enolizable Ketones
- Synthesis 127
- Cyclization Reactions 189, 524, 554 (5528), 835 (5600), 997 (5652)
- Oxidation 78 (5389)
- Reactions without Cyclization 34, 78 (5388), 153, 320 (5469), 480 (5524), 493, 553 (5525), 632 (5566), 699, 730, 736, 898, 914 (5620) (5621)
- 2,3-Epoxycycloalkanones
- Reactions 154 (5403)
- 1,2-Epoxycycloalkyl Ketones
- Reactions 154 (5403)
- Ferrocenyl Ketones
- Synthesis 303
- Furyl Ketones
- Synthesis 303
- 4-Halo-1,3-alkadienyl Ketones
- Cyclization Reactions 258
- 1-Haloalkyl Ketones
- Synthesis 65, 154 (5404), 915 (5623)
- Cyclization Reactions 66
- Reactions without Cyclization 191, 749 (5568), 956
- Reduction 8, 59
- 2-Haloalkyl Ketones
- Cyclization Reactions 554 (5528)
- 3-Haloalkyl Ketones
- Cyclization Reactions 554 (5528)
- 4-Haloalkyl Ketones
- Cyclization Reactions 554 (5528)
- 2-Halocycloalkanones
- Synthesis 65
- *O*-Heterocyclic *C*-Acyl Compounds
- Synthesis 303
- *S*-Heterocyclic *C*-Acyl Compounds
- Synthesis 303
- 4-Hydroxy-1-alkenyl Ketones and *O*-Derivatives
- Synthesis and Reactions 913 (5619)
- 1-Hydroxyalkyl Ketones and *O*-Derivatives
- Synthesis 78 (5389), 520, 630 (5561)
- Reactions 315 (5453)
- 2-Hydroxyalkyl Ketones and *O*-Derivatives
- Synthesis 185, 464, 651, 652, 914 (5620)
- Reactions 914 (5620)
- 3-Hydroxyalkyl Ketones
- Cyclization Reactions 570
- 3-Hydroxycycloalkanones
- Synthesis 526
- Hydroxyketones, General
- Synthesis 404
- 2-Hydroxymethylenecycloalkanones
- Anellation Reactions 451
- Hydroxymethyl Ketones
- Synthesis 476 (5510)
- 17-Hydroxy-20-oxosteroids
- Reactions 315 (5453)
- 1-Mercaptoalkyl Ketones and *S*-Derivatives
- Synthesis 754
- Reactions 560 (5543)
- 2-Mercaptoalkyl Ketones and *S*-Derivatives
- Synthesis and Reactions 914 (5621)
- Methyl Ketones
- Reactions without Cyclization 473 (5498)
- 5-Nitro-1,3-alkadienyl Ketones
- Synthesis and Reactions 153 (5401)
- 1-Nitroalkyl Ketones
- Synthesis 295
- 5-Oxo-1,3-dithians
- Synthesis 184
- Pyrrolyl Ketones
- Reactions 534
- 1-Selenylalkyl Ketones and *Se*-Derivatives
- Synthesis and Reactions 78 (5390)
- 2-Selenylalkyl Ketones and *Se*-Derivatives
- Synthesis 301
- 1-Silylalkyl Ketones
- Synthesis and Reactions 919 (5634)
- 2-Silylalkyl Ketones
- Synthesis 398 (5491)
- Reactions 158 (5415)
- 3-Silyl-2-cycloalkenones
- Synthesis 399 (5493)
- Silylethynyl Ketones
- Synthesis and Reactions 438
- Thienyl Ketones
- Synthesis 303
- 2,2,2-Trihaloethyl Ketones
- Synthesis and Reactions 622

- ● Lactams
- Synthesis 537
- Reactions 228
- 3-Alkanelactams
- Synthesis 211
- 2-Amino-3-alkanelactams
- Synthesis 544
- Oxindoles
- Synthesis 276
- ● Lactol Derivatives
- *o*-Alkyllactols
- Oxidation 157 (5411)
- ● Lactols
- Reactions 409
- ● Lactones
- Synthesis 407
- Reactions 920 (5637)
- 2-Acyl-3-oxo-4-alkanolides
- Reactions 586
- Alkanolides, General
- Reactions 836 (5604)
- 4-Alkanolides
- Synthesis 160 (5422), 659
- 12-Alkanolides
- Synthesis 80 (5397)
- 16-Alkanolides
- Synthesis 80 (5397)
- 2-Alken-4-olides
- Synthesis 160 (5423), 608, 755 (5587)
- 2-Alken-5-olides
- Synthesis 781
- 4-Alkoxy-4-alkanolides
- Synthesis 370
- 4-Alkoxy-2-alken-4-olides
- Synthesis 369
- 2-Alkylidene-4-alkanolides
- Synthesis 240 (5446)
- Bicyclic Lactones
- Synthesis 51
- Bromonorbornaneacetic Acid Lactones
- Synthesis 990

- 2,2-Dihalo-4-alkanolides
- Synthesis 400 (5496)
- 2,3-Dioxo-4-alkanolides and *O*-Derivatives
- Reactions 977
- 2-(2,3-Epoxyalkoxy)-3-alkanolides
- Synthesis 900
- 2-Halo-4-alkanolides
- Synthesis 400 (5496)
- 2-Hydroxy-3-alkananolides and *O*-Derivatives
- Synthesis 388
- 2-Hydroxy-4-alkanolides
- Synthesis 239 (5444)
- 3-Hydroxy-2-alken-4-olides
- Reactions 808
- 2-Hydroxy-5-halo-4-alkanolides and *O*-Derivatives
- Synthesis 400 (5497)
- Macrocyclic Lactones
- Synthesis 80 (5397), 759 (5597), 760 (5598)
- 5-Mercapto-4-alkanolides and *S*-Derivatives
- Synthesis 758 (5593)
- 2-Methylene-4-alkanolides
- Synthesis 750
- α-Methylenelactones, General
- Synthesis 836 (5604)
- 4-Oxa-5-alkanolides
- Synthesis 910
- 5-Oxo-8,9-benzodecen-10-olides
- Synthesis 518
- 2-Oxo-2,4,5,6-tetrahydro-1-benzofurans
- Synthesis and Reactions 434
- Polycyclic γ-Lactones
- Synthesis 374, 496, 516, 608
- Reactions 608
- Polycyclic δ-Lactones
- Synthesis 990
- Spirocyclic Lactones
- Synthesis 910

● Malodinitriles
- Alkylidenemalodinitriles
- Cyclopropanation 751 (5574)
- Reactions without Cyclization 376
- Amino-2-alkenylidenemalodinitriles
- Synthesis 376
- Cyclization Reactions 377
- 3,3-Dialkylthio-2-alkenylidenemalodinitriles
- Cyclization Reactions 378
- Diaminomalodinitriles
- Synthesis 340
- Malodinitrile
- Reactions without Cyclization 95

● Malonic Acid Derivatives, General
- Synthesis 252, 253

● Malonic Acid Esters
- Reactions without Cyclization 559 (5539)
- Acylmalonic Esters
- Synthesis 160 (5421)
- 2,6-Alkadienylidenemalonic Esters
- Synthesis 107
- Alkenylidenemalonic Esters
- Synthesis 107
- Alkylidenemalonic Esters
- Reactions without Cyclization 312
- Alkylmalonic Esters
- Synthesis 209
- Reactions without Cyclization 29, 209, 918 (5630), 998 (5653)
- Dialkyl Malonates
- Reactions without Cyclization 107
- 2,2-Dinitroalkylmalonic Esters
- Synthesis 312
- Oximinomalonic Esters
- Cyclization Reactions 548
- 2,2,2-Trinitroethylmalonic Esters
- Synthesis 312

● Malonic Acids
- Reactions without Cyclization 266
- Dialkylmalonic Acids
- Oxidation 998 (5653)
- 3-Oxoalkylmalonic Acids
- Synthesis and Electrolysis 998 (5653)

● Metal Alkoxides
- Alkali Metal Alkoxides
- Reactions 203
- Magnesium Alkoxides
- Synthesis 72

● Metal Aryloxides
- Reactions 203

● Metal Complexes
- Arsine-alkene-rhodium Complexes
- Synthesis 351
- Bis[arene]-chromium Complexes
- Synthesis 11
- Cobalt Complexes of 1,3-Dicarbonyl Compounds
- Reactions 349
- Copper Chelate Complexes
- Reactions 150
- Ene-palladium Complexes
- Synthesis and Reactions 457
- Magnesium Aroxide Complexes of *N*-Heterocyclic Compounds
- Synthesis 71
- Mercury Chelates
- Synthesis and Reactions 223
- Nickel Complexes of 1,3-Dicarbonyl Compounds
- Reactions 349
- Silylated Metal Complexes
- Synthesis 869

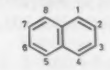
● *N*-Metal Compounds
- Lithium Amides
- Synthesis 463
- Reactions 342

● Methylal
- Reactions 971

● Methylarenes
- Oxidation 144

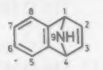
● Monosaccharides and Derivatives
- Dehydroxylation 951
- Reactions 937
- Alkyl Glycoside Ethers
- Synthesis 398 (5489)
- Alkyl Glycosides
- Reactions 398 (5489)
- Aminosugars
- Synthesis 682
- *C*-Branched Monosaccharides
- Synthesis 711
- Crown Ethers and Precursors containing Monosaccharide Units
- Synthesis 459
- Cyclopropane-fused Monosaccharides
- Synthesis 198
- Deoxysugars
- Synthesis 951
- x,y-Dideoxy-x,y-didehydromonosaccharides
- Cyclopropanation 198
- Dihalocyclopropane-fused Monosaccharides
- Synthesis and Reactions 198
- Galactopyranosides
- Selective *O*-Benzoylation 821
- Glycosyl Azides
- Synthesis 937
- Glycosyl Halides
- Reactions 823
- y-Halo-x,y-dideoxy-x,y-didehydromonosaccharides
- Synthesis 200
- 2-Hexenopyranosides
- Synthesis 469
- 3-Hexenopyranosides
- Synthesis 813
- Methyl Pyranosides
- Reactions 813
- Mono-*O*-acylmonosaccharides
- Synthesis 821
- Nitromonosaccharides
- Synthesis 682

● Naphthalene



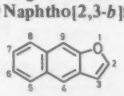
- Naphthalenes
- from Like Ring Skeletons 144
- Ring Synthesis 76 (5383), 291, 693, 854
- Anellation Reactions 427
- 1,2-Dihydronaphthalenes
- Ring Synthesis 915 (5622)
- Oxidation 144
- 1,2,3,4-Tetrahydronaphthalenes (Tetralins)
- from Like Ring Skeletons 465
- Ring Synthesis 854, 915 (5622)
- 1,4,4a,5,8,8a-Hexahydronaphthalenes
- Ring Synthesis 415
- 1,2,3,4,4a,5,8,8a-Octahydronaphthalenes
- from Like Ring Skeletons 614

● Naphthalene-1,4-imine



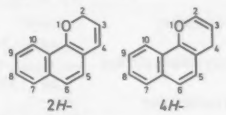
1,4-Dihydro-
- 1,4-Dihydronaphthalene-1,4-imines
- Ring Synthesis 695
- Ring Transformation 693

● Naphtho[2,3-*b*]furan



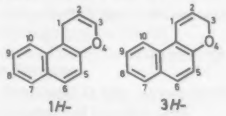
- Ring Synthesis 189

● Naphtho[1,2-*b*]pyran



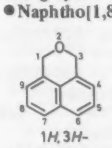
2*H*- 4*H*-
- Ring Synthesis 906

● Naphtho[2,1-*b*]pyran



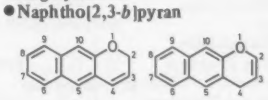
1*H*- 3*H*-
- 3*H*-Naphtho[2,1-*b*]pyrans
- Ring Synthesis 906
- Naphtho[2,1-*b*]pyrylium Salts
- Ring Synthesis 258

● Naphtho[1,8-*cd*]pyran



1*H*,3*H*-
- Ring Synthesis 418

● Naphtho[2,3-*b*]pyran



2*H*- 4*H*-
- Ring Synthesis 906

● Nitric Acid Esters
- Synthesis 54

● Nitrile Oxides
- Synthesis or Generation *in situ* and Cyclization Reactions 413

● Nitriles
- Synthesis 36, 56, 112, 227, 479 (5520), 649, 650, 722
- Reactions without Cyclization 92, 275
- Alkanenitriles
- Synthesis 648
- Reactions without Cyclization 464, 491, 557 (5534)

- 2-Alkenenitriles
- Synthesis 79 (5393), 430, 884, 890
- Reactions without Cyclization 82, 302, 556 (5531), 760 (5599)
- Reduction 2
- 2-Alkynenitriles
- Reactions without Cyclization 431
- Aminoacetonitriles
- Reactions without Cyclization 998 (5654)
- 2-Aminoalkanenitriles
- Synthesis 127, 716, 741, 996 (5647)
- Reactions without Cyclization 127, 477 (5513), 996 (5647)
- 3-Aminoalkanenitriles
- Synthesis 760 (5599)
- 2-Amino-3-cyanopyridines
- Synthesis 377
- 1-Aminocycloalkanecarbonitriles
- Synthesis 716
- 5-Amino-3-oxo-4-alkenenitriles
- Synthesis 756 (5588)
- Arenecarbonitriles
- Synthesis 291
- Cyclization Reactions 117, 756 (5588)
- Hydrodecyanation 291
- Reactions without Cyclization 117
- 3-Aryl-2-alkenenitriles
- Synthesis 797
- 3-Aryl-2-cycloalkyl-2-alkenenitriles
- Synthesis 797
- 2-Azidoalkanenitriles
- Synthesis 395 (5480)
- 2-Benzylidene-3-hydroxyalkanenitriles
- Synthesis 798
- Bridgehead-cyanobicycloalkanes
- Synthesis 54
- Diaminoacetonitriles
- Reactions 342
- 3,5-Dihydroxyalkanenitriles
- Synthesis 756 (5588)
- 3-Halo-2-alkenenitriles
- Synthesis 255
- *N*-Heterocyclic Nitriles
- Synthesis 102
- 2-Hydroxyalkanenitriles and *O*-Derivatives
- Synthesis 478 (5516)
- Cyclization Reactions 909
- Reduction 478 (5516)
- 3-Hydroxyalkanenitriles and *O*-Derivatives
- Synthesis 464, 556 (5531), 654, 756 (5588)
- 2-Hydroxy-3-alkenenitriles and *O*-Derivatives
- Cyclization Reactions 835 (5600)
- Iminoacetonitriles
- Reactions without Cyclization 629 (5556)
- 2-Iminoalkanenitriles
- Synthesis 629 (5556)
- 2-Imino-3,3,3-trihalopropanenitriles
- Synthesis 748
- 3-Nitro-2-sulfonylalkanenitriles
- Synthesis and Reactions 79 (5393)
- 2-Oxoalkanenitriles
- Synthesis 204, 396 (5484)
- 3-Oxoalkanenitriles
- Cyclization Reactions 189
- 2-Silylimino-3,3,3-trihalopropanenitriles
- Synthesis and Reactions 747
- 2-Sulfonylalkanenitriles
- Reactions 79 (5393)
- 2-Tetrahydropyranylidenacetonitriles
- Synthesis 920 (5637)
- Trifluoroacetonitrile
- Reactions 747
- ● *C*-Nitro Compounds (including *aci*-Nitro Compounds)
- *vic*-Acyloxynitrosteroids
- Synthesis 125
- *vic*-Dinitroalkanes
- Reactions 79 (5393), 312
- Nitroacetic Acid
- Reactions 676 (review)
- Nitroacetic Esters
- Synthesis and Reactions 666 (review)
- Nitroalcohols
- Reactions 600
- 1-Nitroaldehyde Hydrazones
- Synthesis 380, 909
- Reactions 909
- 1-Nitro-1,3-alkadienes
- Reactions 153 (5401)
- Nitroalkanes
- Synthesis 419, 838 (5608) (5609)
- Reactions 36, 238 (5441), 380, 420, 497, 632 (5564), 751 (5574), 909
- Reduction 15
- 1-Nitro-1,3,5-alkatrienes
- Synthesis 153 (5401)
- Nitroalkenes Type C=C−NO_2
- Synthesis 679
- Reactions 86, 239 (5442)
- Nitroarenes
- Synthesis 49, 858
- Reactions 17, 220
- Reduction or Reductive Cyclization 17, 49, 587, 935
- Nitroazulenes
- Synthesis 981
- *aci*-Nitro Compounds
- Reactions 295, 380
- Nitromethane
- Reactions 838 (5609)
- Nitropyridine Derivatives
- Synthesis 682
- 2-Oxonitroalkanes
- Synthesis 295
- Trinitromethane
- Reactions 312
- ● *N*-Nitro Compounds
- Nitrimines
- Reactions 830
- *N*-Nitroheterocyclic Compounds
- Synthesis 169
- ● Nitrones
- Synthesis 414
- ● Nitronic Acids and Salts
- *C*-Nitronic Acids

see: *C*-Nitro Compounds (*aci*-Nitro Compounds)

- *N*-Nitronic Acids
- Synthesis and Reactions 831
- ● *C*-Nitroso Compounds
- Synthesis 414
- *gem*-Acyloxynitrososteroids
- Synthesis 125
- *N*-Heterocyclic *C*-Nitroso Compounds
- Synthesis 857
- Nitrosoarenes
- Synthesis 857
- Nitrosotrifluoromethane
- Reactions 96
- ● *N*-Nitroso Compounds
- *N*-Nitrosoamines
- Synthesis 532
- Reactions 423, 532
- *N*-Nitrosocarboxamides
- Synthesis 101
- *N*-Nitrosoheterocyclic Compounds
- Synthesis 169
- *N*-Nitrososulfonamides
- Synthesis 100, 207
- ● Nitroxyls
- Synthesis 267, 269, 530, 649
- Reactions 267, 269, 530, 649, 855
- ● Nucleosides
- Synthesis 599
- Reactions 137, 267, 599
- ● Nucleotides
- Synthesis 137
- Reactions 267

- ● Olefins

see: Alkenes

- ● Organoaluminum Compounds
- 1-Alkenylalanes
- Reactions 234 (5428), 501 [cf. 1035]
- 1-Alkynylalanes
- Reactions 313 (5448)
- Trialkylalanes
- Reactions 235 (5431), 501 [cf. 1035], 900
- ● Organocadmium Compounds
- Reactions 209
- ● Organocopper Compounds
- 1-Alkenylcopper(I) Complexes
- Synthesis and Reactions 314 (5452), 316 (5458)
- 1-Cuproalkanephosphonic Acid Derivatives
- Synthesis and Reactions 832
- Organocuprates
- Reactions 625 (5544) (5545), 826
- Organoheterocuprates
- Reactions 390, 432, 886
- ● Organolithium Compounds
- Reactions 155 (5406), 629 (5558)
- 1,2-Alkadienyllithium
- Reactions 509
- 1,3-Alkadienyllithium
- Reactions 158 (5417)
- 1-Alkenyllithium
- Synthesis 44
- Reactions 45
- Alkyllithium
- Reactions 318 (5463), 553 (5525)
- 1-Alkynyllithium
- Reactions 296, 316 (5458)
- Aryllithium
- Reactions 698, 847, 859
- 1,1-Dihaloalkyllithium
- Reactions 968
- Dihalomethyllithium
- Reactions 503
- Dilithio-3-oxoalkanenitriles
- Synthesis and Reactions 756 (5588)
- Enamine Lithium Derivatives
- Reactions 160 (5423)
- *O*-Heterocyclic *C*-Lithio Compounds
- Reactions 610
- 1-Lithiated *S,S*-Acetals
- Reactions 635
- 2-Lithiated 1,3-Dithians
- Reactions 917 (5627)
- 1-Lithioalkanephosphonic Esters
- Reactions 920 (5637)
- 2-Lithio-2-alkenenitriles
- Reactions 797
- α-Lithiocarboxamides
- Reactions 954
- α-Lithiocarboxylic Esters
- Reactions 917 (5626), 920 (5637)
- α-Lithioketones
- Reactions 917 (5626)
- α-Lithionitriles
- Reactions 127
- α-Lithiosulfones
- Reactions 535
- Lithium 3-Lithio-2-alkenoates
- Reactions 755 (5587)
- Lithium α-Lithiocarboxylates
- Reactions 160 (5422), 388
- S-CLi Compounds
- Reactions 757 (5591)
- Si-CLi Compounds
- Reactions 79 (5392), 919 (5634)
- Silyl α-Lithiocarboxylates
- Reactions 557 (5536)
- Triarylthiomethyllithium
- Reactions 754 (5583)
- ● Organomagnesium Compounds
- General, Type R−MgHal
- Reactions 79 (5391), 159 (5420), 234 (5429), 432, 476 (5508), 629 (5558), 749 (5568), 837 (5607), 971, 993 (5639)
- Acetal-Protected 3-Oxoalkylmagnesium Halides
- Reactions 752 (5578)

- 1-Alkenylmagnesium Halides
- Reactions 626 (5547), 979
- 2-Alkenylmagnesium Halides
- Reactions 626 (5547), 800, 837 (5606)
- Alkylmagnesium Halides
- Reactions 37, 235 (5430), 314 (5452), 316 (5458), 511, 887
- 1-Alkynylmagnesium Halides
- Reactions 114, 293
- Arylmagnesium Halides
- Reactions 626 (5547), 993 (5640), 845, 859
- ω-Halomagnesiooxyalkylmagnesium Halides
- Synthesis and Reactions 886

● Organomercury Compounds
- General, Type R–HgX
- Synthesis 891, 893, 897, 990
- Reactions 891, 893, 897, 990
- 1-Alkenylmercury Halides
- Reactions 313 (5449), 318 (5462)
- 1-Haloalkylorganomercury Compounds
- Synthesis and Reactions 893

● Organosodium Compounds
- S–CNa Compounds
- Reactions 79 (5393)
- Sodiomalonic Esters
- Reactions 160 (5421)

● Organozinc Compounds
- 1-Alkynylzinc Halides
- Reactions 76 (5382)

● Organozirconium Compounds
- Reactions 234 (5428), 235 (5431)

● Orthocarbonic Acid Monoester Triamides
- Synthesis and Reactions 344

● Orthocarboxylic Acid Esters
- Reactions 675
- Alkanoic Orthoesters
- Reactions 317 (5460), 319 (5467)
- Cyclic Orthocarboxylic Esters
- Synthesis 683
- Trialkyl Nitroorthoacetates
- Synthesis 683
- Trialkyl Orthoformates
- Reactions 690, 691

● Orthoformamides
- Synthesis 342

● 1,2,4-Oxadiazole

- Ring Synthesis 413

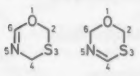
● 1,3,4-Oxadiazole

- 1,3,4-Oxadiazoles
- Ring Synthesis 946
- 2,5-Dihydro-1,3,4-oxadiazoles
- Ring Synthesis and Cleavage 154 (5403)

● [1,2,5]Oxadiazolo[3,4-*c*]pyridine

- Ring Synthesis 687

● 1,3,5-Oxathiazine



4*H*- 6*H*-

- Ring Synthesis 801

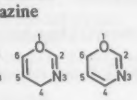
● 1,3-Oxathiole

- 1,3-Oxathiolium Salts
- Ring Synthesis 182
- 1,3-Oxathiolanes
- Ring Cleavage 753 (5581)

● 4-Oxatricyclo[6.2.2.0^{2,7}]dodecane

- 4-Oxatricyclo[6.6.2.0^{2,7}]-9-dodecenes
- Ring Synthesis 43

● 1,3-Oxazine



2*H*- 4*H*- 6*H*-

- 4*H*-1,3-Oxazines
- Ring Synthesis 117
- Tetrahydro-1,3-oxazines
- from Like Ring Skeletons 682

● 1,2-Oxazole

- 1,2-Oxazoles
- Ring Synthesis 255, 385, 672, 684, 855
- Anellation Reactions 449
- Ring Cleavage 756 (5588)
- 4,5-Dihydro-1,2-oxazole 2-Oxides
- Ring Synthesis 680, 683
- 4,5-Dihydro-1,2-oxazoles
- Ring Cleavage 628 (5553)
- Substitution Reactions 628 (5553)

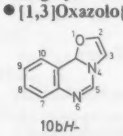
● 1,3-Oxazole

- 4,5-Dihydro-1,3-oxazoles
- Ring Synthesis 216, 231, 558 (5537)
- Ring Cleavage 558 (5537)
- Tetrahydro-1,3-oxazoles
- Ring Synthesis 222, 593

● 1,2-Oxazolo[5,4-*b*]pyridine

- Ring Synthesis 449

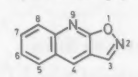
● [1,3]Oxazolo[3,2-*c*]quinazoline



10b*H*-

- 2,3,5,6-Tetrahydro-10b*H*-[1,3]oxazolo-[3,2-*c*]quinazolines
- Ring Synthesis 173

● 1,2-Oxazolo[5,4-*b*]quinoline



- 5,6,7,8-Tetrahydro-1,2-oxazolo[5,4-*b*]quinolines
- Ring Synthesis 451

● Oxete

- Oxetanes
- Ring Synthesis 554 (5528)

● Oxime Derivatives
- *O*-Acyloximes
- Synthesis and Reactions 726

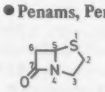
● Oximes
- Reduction 76 (5384)
- Aldoximes
- Dehydration 56, 227
- Oxidation 413
- *O*-(2-Alkenyl)-oximes
- Synthesis and Cyclization Reactions 221
- α-Aminooximes
- Synthesis 155 (5407)
- 2-Amino-4-oximino-2-alkenoic Esters
- Synthesis 385
- 3-Halo-2-alkenal Oximes
- Synthesis 255
- α-Hydroxyoximes and *O*-Derivatives
- Synthesis 155 (5407)
- Reactions without Cyclization 479 (5520)
- Ketoximes
- Reactions without Cyclization 125, 726
- Reduction 15
- Regeneration of the Ketone 113
- α-Oximinocarboxylic Acid Derivatives
- Cyclization Reactions 548

● Oxindoles
- Synthesis 276

● Oxirene

- Oxiranes
- Ring Synthesis 395 (5480), 399 (5494), 400 (5495), 560 (5543), 641
- Deoxygenation 315 (5454)
- Ring Cleavage 62, 164, 314 (5452), 316 (5458), 447, 467, 482, 509, 641, 837 (5606)

● Penams, Penicillins, and Relatives



Penam

- Synthesis 211

● Pentalene

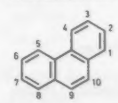
- 1,2,3,3a,4,5-Hexahydropentalenes
- Ring Synthesis 752 (5578)
- Octahydropentalenes
- Ring Transformation 333

● Peptides
- Synthesis 355
- Dipeptides
- Synthesis 197, 726
- Peptides, as Esters
- Synthesis 466

● Peroxy Compounds
- Endoperoxy Compounds
- Reactions 807
- Furan Peroxides
- Synthesis and Reactions 383

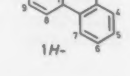
● Phanes
- [2.2]Metacyclophanes
- Synthesis 934
- [3.3]Metacyclophanes
- Synthesis 935

● Phenanthrene



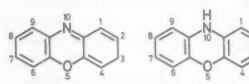
- 1,2,3,4,9,10-Hexahydrophenanthrenes
- Ring Synthesis 374
- 2,3,4,4a,9,10-Hexahydrophenanthrenes
- Ring Synthesis 374
- 1,2,3,4,5,6,7,8-Octahydrophenanthrenes
- from Like Ring Skeletons 465

● Phenanthro[9,10-*d*]imidazole



1*H*-

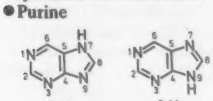
- Ring Synthesis 171
● Phenols
- Synthesis 76 (5383), 291, 536, 922
- Alkylation 839 (5611)
- Anellation Reactions 126
- Formylation 839 (5612)
- Reactions 365, 429, 620, 632 (5565), 755 (5586), 757 (5590), 822, 824
- Reduction 626 (5548), 920 (5636)
- *o*-(1-Alkenyl)-phenols
- Synthesis 712, 993 (5639)
- Alkoxyphenols
- Synthesis 521, 925, 988
- *o*-Alkylphenols
- Synthesis 839 (5611), 995 (5646)
- Aminophenols, General
- Reactions of the Amino Groups 278
- *o*-Aminophenols
- Anellation Reactions 337
- *p*-Aminophenols
- Synthesis 602
- *o*-Arylthio-phenols
- Synthesis 480 (5522)
- Bis[hydroxyphenyl]-methanes
- Synthesis 922
- 2,4-Dihalophenols
- Oxidation 206
- Dihydroxybiphenyls
- Synthesis 923, 927
- Fluorenones
- Synthesis 987
- *o*-(1-Hydroxyalkyl)-phenols
- Synthesis 366
- *o*-(1-Hydroxy-2,2,2-trichloroethyl)-phenols
- Synthesis 824
- *o*-(Methylthiomethyl)-phenols
- Synthesis 632 (5565)
● Phenoxazine



3*H*- 10*H*-

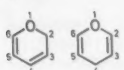
- 3-Phenoxazones
- Ring Synthesis 412
● Pheromone Precursors
- Synthesis 942
● Pheromones and Relatives
- Synthesis 209, 511, 886
● Phosphenimidous Amides
- Synthesis and Reactions 811
● Phosphenodiimidic Amides
- Synthesis 811
● Phosphine Imides
- Synthesis 805
- Diaminohalophosphine Imides
- Synthesis and Reactions 811
- *N*-Thioacylphosphine Imides
- Synthesis and Reactions 887
● Phosphine Oxides
- Synthesis 859
- 1-Amino-2-cyano-1-alkenylphosphine Oxides
- Synthesis 95
- Bis[1-alkynyl]-phosphine Oxides
- Reactions 109
- Diaryl-(dihydroxyaryl)-phosphine Oxides
- Synthesis 89
- 1-Hydroxyalkylphosphine Oxides
- Synthesis 88, 90
- Tris[1-alkynyl]-phosphine Oxides
- Reactions 109
● Phosphines
- 4,5-Bis[diphenylphosphinomethyl]-1,3-dioxolanes
- Synthesis 351
- Triarylphosphines
- Reactions 132, 299, 538
● Phosphine Sulfides
- 1-Amino-2-cyano-1-alkenylphosphine Sulfides
- Synthesis 95
- 1-Hydroxyalkylphosphine Sulfides
- Synthesis 88, 90
● Phosphinic Acid Amides
- Synthesis 95, 110, 691
- Reactions 691
● Phosphinic Acid Esters
- Synthesis 82
- Alkyl-(aminocarbonyl)-phosphinic Esters
- Synthesis 94
- Alkylarylphosphinic Esters (chiral)
- Synthesis 110
- 1-Aminoalkyl-arylphosphinic Esters
- Synthesis 91
- Aryl-1-hydroxyalkylphosphinic Esters
- Synthesis 90
● Phosphinic Acid Halides
- Reactions 110, 160 (5421)
● Phosphinothioic Acid *O*-Esters
- Synthesis 91
● Phosphinothious Acids
- Reactions 88
● Phosphinous Acids
- Reactions 88
● Phosphonic Acid Esters
- Synthesis 82
- 2,3-Alkadienephosphonic Esters
- Synthesis 832
- Alkanephosphonic Esters
- Reactions 884
- Alkene-bis-phosphonic Esters
- Synthesis 86
- 2-Alkenephosphonic Esters
- Synthesis 89
- 1-Alkoxycarbonylalkanephosphonic Esters
- Reactions 884
- 1-Aminoalkane-1,1-diphosphonic Esters
- Synthesis 95
- 1-Aminoalkanephosphonic Esters
- Synthesis 91, 92
- 2-Aminoalkanephosphonic Esters
- Synthesis 985
- Aminooxomethane- and Aminothioxomethanephosphonic Esters
- Synthesis 94
- Arenephosphonic Esters
- Synthesis 21, 859
- Arylmethanephosphonic Esters
- Synthesis and Reactions 712
- 1-Cyanoalkanephosphonic Esters
- Reactions 884
- Dialkyl Pentafluorobenzenephosphonates
- Synthesis 615
- Dialkyl Trifluoromethanephosphonates
- Synthesis 615
- 1-Hydrazinoalkanephosphonic Esters
- Synthesis 92
- 1-Hydroxy-1-alkenephosphonic Esters and *O*-Derivatives
- Synthesis 89
- 1-Hydroxy-2-alkynephosphonic Esters
- Synthesis 89
- Iminomethanediphosphonic Esters
- Reactions 93
- 1-Methylenalkanephosphonic Esters
- Synthesis 147
- 2-Nitroalkanephosphonic Esters
- Synthesis 86
- 1-Oxoalkanephosphonic Esters
- Synthesis and Reactions 147
- Pyridinephosphonic Esters and Related Compounds
- Synthesis 55, 454
- Thiophenephosphonic Esters
- Synthesis 859
● Phosphonic Acids
- Alkane-bis-phosphonic Acids
- Synthesis 85
- 1-Alkenephosphonic Acids
- Reactions 85
- Arenephosphonic Acids
- Synthesis 21
- 1-Hydroxyalkanephosphonic Acids
- Synthesis 88, 90
- Pyridinephosphonic Acids
- Synthesis 452
● Phosphonium Salts
- 2-Alkoxy-1,3-alkadienylphosphonium Salts
- Reactions 997 (5652)
- Alkyltriarylphosphonium Thiocyanates
- Synthesis 887
- Aminotrialkylphosphonium Salts
- Synthesis 887
- 2-Diazo-3-oxoalkyltriarylphosphonium Salts
- Synthesis 805
- 2-(1,3-Dioxan-2-yl)-alkyltriarylphosphonium Salts
- Synthesis 132
- Glycosyloxytriaminophosphonium Salts
- Synthesis and Reactions 951
- 2-Oxoalkane-1,3-bis-phosphonium Salts
- Synthesis and Reactions 201
- 3-Oxoalkylphosphonium Salts
- Synthesis 538
- Reactions 541
- Polyenylphosphonium Salts
- Reactions 240 (5447)
● Phosphonoamidic Acid Esters
- Synthesis 90
● Phosphonothioic Acid Esters
- 2,3-Alkadienephosphonothioic *O,O*-Diesters
- Synthesis 832
- Aminooxomethanephosphonothioic Esters
- Synthesis 94
- Arenephosphonothioic *O,O*-Diesters
- Synthesis 21
- *O,O*-Diesters, General
- Synthesis 82, 87
- Thiophenephosphonothioic *O,O*-Diesters
- Synthesis 859
● Phosphonothioic Dihalides
- Synthesis 22
● Phosphonous Acid Esters
- Alkyl Hydrogen Phosphonites
- Reactions 82
● Phosphonous Acids
- 1-Hydroxyalkanephosphonous Acids
- Synthesis 88
● Phosphoranes
- 3-Alkoxy-2-alkenylidenetriarylphosphoranes
- Reactions 658
- 1-Alkoxycarbonylalkylidenephosphoranes
- Reactions 904, 906
- Alkoxymethylenetriarylphosphoranes
- Reactions 643
- Alkylidenetriarylphosphoranes
- Reactions 147
- 1-Arylazo-2-oxoalkylidenephosphoranes
- Synthesis 299
- 2-Carboxyalkylidenetriarylphosphoranes
- Reactions 659
- 2-(1,3-Dioxan-2-yl)-ethylidene-triphenylphosphoranes
- Reactions 132
- 2-Oxoalkane-1,3-diylidenediphosphoranes
- Synthesis and Reactions 201
- 2-Oxo-3-alkenylidenephosphoranes
- Synthesis and Reactions 201
- 4-Oxo-2-alkenylidenephosphoranes
- Reactions 660
- 2-Oxoalkylidenephosphoranes
- Reactions 266, 805
- 2-Silylalkylidenephosphoranes
- Reactions 447, 778
● Phosphoric Acid Esters
- 1-Alkenyl Dihydrogen Phosphates
- Synthesis 191
- 1-Alkenyl Disilyl Phosphates
- Synthesis and Reactions 191
- 1-Alkenyl Phosphates

- Reactions 191
- Reduction 13
- **Aryl Dialkyl Phosphates**
- Synthesis and Reactions 626 (5548)
- **Dialkyl 2,2-Dihalovinyl Phosphates**
- Synthesis 90
- **Dialkyl Hydroxyaryl Phosphates**
- Synthesis 89
- **Trialkyl Phosphates**
- Synthesis 565
- **● Phosphoric Acid Triamides**
- Synthesis 269
- **● Phosphoroamidic Acid Esters**
- Synthesis 92, 93
- Reactions 577
- ***N*-Hydroxyphosphoroamidic Esters**
- Synthesis 96
- ***N*-(1-Phosphonylalkyl)-phosphoroamidic Esters**
- Synthesis 93, 94, 95
- **● Phosphoroamidous Acid Esters**
- Reactions 718
- **● Phosphorochloridic Acid Esters**
- **Alkyl Aryl Phosphorochloridates**
- Synthesis and Reactions 137
- **● Phosphorochloridous Acid Esters**
- Reactions 21
- **● Phosphorodiamidic Acid Esters**
- **2-Alkynyl Phosphorodiamidates**
- Reactions 882
- **● Phosphorodichloridic Acid Esters**
- Synthesis and Reactions 137
- **● Phosphorodichloridous Acid Esters**
- Reactions 21
- **● Phosphorohydrazidic Acid Esters**
- Synthesis 96
- **Phosphorothioic Acid Esters**
- ***O,O,O*-Trialkyl Phosphorothioates**
- Synthesis 860
- ***O,O,S*-Trialkyl Phosphorothioates**
- Reactions 890
- **● Phosphorothious Acid Esters**
- ***O,O*-Diesters**
- Reactions 82
- **● Phosphorous Acid Esters**
- **Dialkyl Hydrogen Phosphites**
- Reactions 82
- **Trialkyl Phosphites**
- Reactions 147, 615
- **● Polyamino Compounds**
- **1,1,2,2-Tetraaminoalkanes**
- Reactions 595
- **● Polyenes (conjugated)**
- Synthesis 240 (5447)
- **1,3,5-Alkatrienes**
- Synthesis 153 (5401)
- **● Polymetal Derivatives of Organic Compounds**
- Reactions 621
- **● Porphyrins and Relatives**
- Synthesis 548
- **● Prostaglandins and Relatives**
- Synthesis and Reactions 759 (5597)
- **● Purine**



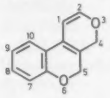
7*H*- 9*H*-

- **1,2,3,6-Tetrahydro-7*H*-purines**
- Anellation Reactions 581
- **● Pyran**



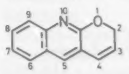
2*H*- 4*H*-

- **2*H*-Pyrans**
- Ring Synthesis 107
- **2-Pyrones**
- Ring Transformation 854, 987
- **4-Pyrones**
- Ring Transformation 682
- **Pyrylium Hydroxides**
- Reactions 993 (5638)
- **Pyrylium Salts**
- from Like Ring Skeletons 993 (5638)
- Ring Synthesis 258, 437
- Ring Transformation 97 (5394), 437, 993 (5638), 995 (5644), 999 (5656)
- **3,4-Dihydro-2*H*-pyrans**
- Ring Synthesis 554 (5528)
- Reactions with Retention of the Ring Skeleton 610, 620
- Ring Cleavage 611, 993 (5639)
- **5,6-Dihydro-2*H*-pyrans**
- from Like Ring Skeletons 364
- Ring Synthesis 41, 744
- Anellation Reactions 43
- **2-Hydroxy-5,6-dihydro-2*H*-pyrans**
- Synthesis and Reactions 364
- **Tetrahydropyrans**
- Ring Synthesis 892
- **● Pyrano[3,4-*c*][1]benzopyran**



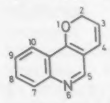
4*H*,5*H*-

- **1,2-Dihydro-4*H*,5*H*-pyrano[3,4-*c*][1]benzopyrans**
- Ring Synthesis 732
- **● Pyrano[2,3-*b*]quinoline**



2*H*-

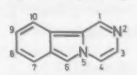
- Ring Synthesis 904
- **● Pyrano[3,2-*c*]quinoline**



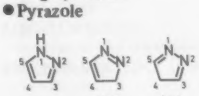
2*H*-

- Ring Synthesis 904
- **● Pyrazine**

- **1,4-Dihydropyrazines**
- Ring Synthesis 681
- **5,6-Dihydro-2*H*-pyrano[3,2-*c*]quinolines**
- Ring Synthesis 904
- **● Pyrazino[2,1-*a*]isoindole**

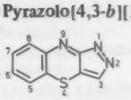


- **1,2,3,4,6,10b-Hexahydropyrazino[2,1-*a*]-isoindoles**
- Ring Synthesis 381
- **● Pyrazole**

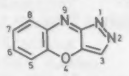


3*H*- 4*H*-

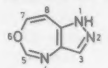
- **Pyrazoles**
- from Like Ring Skeletons 194
- Ring Synthesis 254, 584, 682, 854
- Anellation Reactions 440
- **3*H*-Pyrazoles**
- Ring Synthesis 854
- **4*H*-Pyrazoles**
- Reduction of Substituents 194
- **2,3-Dihydropyrazoles**
- Ring Synthesis 284, 681
- **● Pyrazolo[4,3-*b*][1,4]benzothiazine**



- **1,9- and 2,9-Dihydropyrazolo[4,3-*b*][1,4]-benzothiazines**
- Ring Synthesis 255
- **● Pyrazolo[4,3-*b*][1,4]benzoxazine**

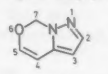


- **1,9- and 2,9-Dihydropyrazolo[4,3-*b*][1,4]-benzoxazines**
- Ring Synthesis 255
- **● Pyrazolo[4,3-*d*][1,3]oxazepine**



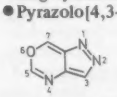
1*H*-

- **4,5,7,8-Tetrahydro-1*H*-pyrazolo[4,3-*d*]-1,3-oxazepines**
- Ring Synthesis 586
- **● Pyrazolo[1,5-*c*][1,3]oxazine**

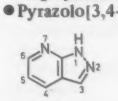


7*H*-

- **4,5-Dihydro-7*H*-pyrazolo[1,5-*c*][1,3]oxazines**
- Ring Synthesis 440
- **● Pyrazolo[4,3-*d*][1,3]oxazine**

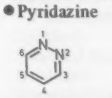


- **1(2),4,5,7-Tetrahydropyrazolo[4,3-*d*][1,3]-oxazines**
- Ring Synthesis 586
- **● Pyrazolo[3,4-*b*]pyridine**

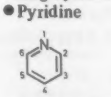


1*H*-

- from Like Ring Skeletons 194
- **● Pyridazine**



- **Pyridazinium Salts**
- Ring Synthesis 385
- **1,4-Dihydropyridazines**
- Ring Synthesis 385, 791
- **2,3-Dihydropyridazines**
- Ring Synthesis 385
- **● Pyridine**



see also: Bipyridines and Derivatives

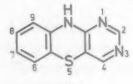
- **Pyridines**
- from Like Ring Skeletons 452
- Ring Synthesis 256, 377, 808
- Reactions of Substituents 192
- **Pyridinium Betaines**
- Synthesis 699
- **Pyridinium Salts**
- Ring Synthesis 79 (5394), 257, 993 (5638), 999 (5656)
- Anion Exchange 752 (5577)
- Reactions 317 (5461), 452, 454
- Reduction 282
- Ring Cleavage 79 (5394), 80 (5395), 993 (5638), 995 (5644), 999 (5656)

- Pyridinium Ylides
- Anellation Reactions 746
- 2-Amino-4-oxo-1,4-dihydropyridines
- Ring Synthesis 756 (5588)
- 2-Imino-1,2-dihydropyridines
- Synthesis 525
- 2-Oxo-1,2-dihydropyridines (2-Pyridones)
- Ring Synthesis 256, 345, 682
- 1,2,3,6-Tetrahydropyridines
- from Like Ring Skeletons 282
- 1,2,3,6-Tetrahydropyridinium Salts
- Ring Cleavage 511
- Piperidines
- Ring Synthesis 51, 891, 897
- Anellation Reactions 106
- Pyrido[1,2-*a*]pyrimidine

4*H*-

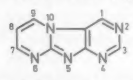
- Ring Synthesis 680
- Pyrimidine

- Pyrimidines
- Ring Synthesis 260
- Pyrimidinium Salts
- Ring Synthesis 260
- 1,2-Dihydropyrimidines
- Ring Synthesis 346
- 1,2,3,4-Tetrahydropyrimidines
- from Like Ring Skeletons 194
- Ring Synthesis 287, 681
- Hexahydropyrimidines
- Ring Synthesis 287
- Reactions with Retention of the Ring Skeleton 194
- 4-Oxo-2-thioxohydropyrimidine Derivatives
- Ring Synthesis 287
- Pyrimido[5,4-*b*][1,4]benzothiazine

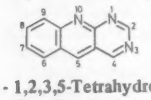


10*H*-

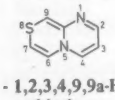
- Ring Synthesis 260
- Pyrimido[1,2-*f*]purine



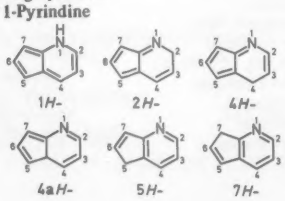
- 1,2,3,4,6,7,8,9-Octahydropyrimido[1,2-*f*]-purines
- Ring Synthesis 581
- Pyrimido[4,5-*b*]quinoline



- 1,2,3,5-Tetrahydropyrimido[5,4-*b*]quinolines
- Ring Synthesis 257
- Pyrimido[2,1-*c*][1,4]thiazine



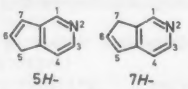
- 1,2,3,4,9,9a-Hexahydropyrimido[2,1-*c*][1,4]-thiazines
- Ring Synthesis 624
- 1-Pyrindine



1*H*- 2*H*- 4*H*-

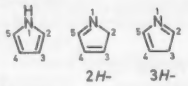
4a*H*- 5*H*- 7*H*-

- 6,7-Dihydro-5*H*-1-pyrindines
- Ring Synthesis 222
- 2-Pyrindine



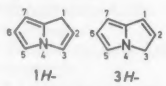
5*H*- 7*H*-

- 2,3,4,4a,5,6-Hexahydro-1*H*-2-pyrindines
- Ring Synthesis 553 (5526)
- Pyrrole



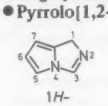
2*H*- 3*H*-

- Pyrroles
- from Like Ring Skeletons 217
- Ring Synthesis 214, 548, 587
- *N*-Alkylation 617
- Diels-Alder-Reactions 693
- Pyrrolidines
- Ring Synthesis 68, 150, 891
- Pyrrolizine



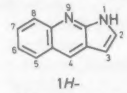
1*H*- 3*H*-

- Pyrrolizidines
- Ring Synthesis 8
- Pyrrolo[1,2-*c*]imidazole



1*H*-

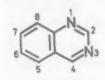
- Hexahydropyrrolo[1,2-*c*]imidazoles
- Ring Synthesis and Cleavage 837 (5607)
- Pyrrolo[2,3-*b*]quinoline



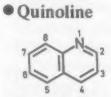
1*H*-

- 1*H*-Pyrrolo[2,3-*b*]quinolines
- from Like Ring Skeletons 353
- 2,3-Dihydro-1*H*-pyrrolo[2,3-*b*]quinolines
- Ring Synthesis 353

- Quaterphenyls
- Synthesis 933
- Quinazoline



- Quinazolines
- Ring Synthesis 173, 176
- 1,2-Dihydroquinazolines
- Ring Synthesis 173
- 2-Thioxo-1,2-dihydroquinazolines
- Ring Synthesis 120
- Quinol Derivatives
- Quinol Amides
- Synthesis and Reactions 602
- Quinol Ethers
- Synthesis 988
- Reactions 925
- Quinol Halides
- Reactions 602, 925, 988
- Quinoline



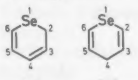
- Quinolines
- Ring Synthesis 257
- Anellation Reactions 353, 904
- 1,2-Dihydroquinolines
- from Like Ring Skeletons 55
- 2-Oxo-1,2-dihydroquinolines (2-Quinolones)
- Ring Synthesis 174, 682, 759 (5596)
- 3,4-Dihydroquinolines
- Reactions with Retention of the Ring Skeleton 194
- 4-Quinolones
- from Like Ring Skeletons 194
- 5,6,7,8-Tetrahydroquinolines
- Ring Synthesis 222
- Quinols
- Synthesis 474 (5502)
- Quinone Derivatives
- Quinone Bis-acetals
- Reactions 603, 605
- Quinone Diimines

see: Imines

- Quinone Mono-acetals
- Synthesis and Reactions 606, 696
- Quinone Monoimines
- Synthesis 412
- Quinones
- Synthesis 411
- *p*-Benzoquinones
- Synthesis 206, 521, 606, 695, 696
- Anellation Reactions 76 (5383), 271, 415
- Reactions with Retention of the Ring Skeleton 89, 474 (5502)
- 4,5-Diamino-*o*-benzoquinones
- Synthesis and Reactions 695
- [2,2]Metacyclophanequinones
- Synthesis 934
- [3,3]-Metacyclophanequinones
- Synthesis 935
- 1,2-Naphthoquinones
- Synthesis 206
- 1,4-Naphthoquinones
- Synthesis 206, 415, 521
- Anellation Reactions 149, 189, 271
- Phenanthrene-9,10-quinones
- Anellation Reactions 171

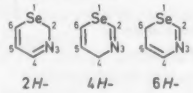
- Santonins
- Reactions 898
- 1,2,5-Selenadiazole

- 1,2,5-Selenadiazoles
- Ring Synthesis 979
- Selenapyran



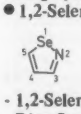
2*H*- 4*H*-

- 2-Oxo-2*H*-selenapyrans
- Ring Synthesis 250
- Selenapyrylium Salts
- Ring Synthesis 250
- 1,3-Selenazine



2*H*- 4*H*- 6*H*-

- 1,3-Selenazinium Salts
- Ring Synthesis 259
- 1,2-Selenazole



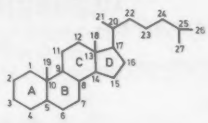
- 1,2-Selenazolium Salts
- Ring Synthesis 249
- 1,3-Selenazole

- Ring Synthesis 66
- Selenenic Acid Halides
- Reactions 982
- Selenenic Acids

- Reactions *in situ* 237 (5437)
● **Selenium Diimides**
- Reactions 980
● **Selenocarbamic Acid Esters (Carbamoselenoic Esters)**
- Synthesis 597
● **Selenocarboxylic Acid Amides**
- **Alkaneselenoamides**
- Reactions 455
- **2-Silylalkaneselenoamides**
- Synthesis 457
● **Selenocarboxylic Acid Esters**
- ***Se*-Esters, General**
- Synthesis 397 (5487), 480 (5523)
● **Selenocyanates**
- **Aryl Selenocyanates**
- Reactions without Cyclization 480 (5523)
- **Benzyl Selenocyanates**
- Synthesis and Reactions 706
● **Selenoethers**
- **Alkyl Aryl Selenides**
- Synthesis 482
- Reactions 77 (5387), 233 (5424), 487
- **Aryl Silyl Selenides**
- Synthesis and Reactions 300
- **Dialkyl Selenides**
- Reactions 233 (5424), 487
- **2-Oxoalkyl Selenides**
- Synthesis and Reactions 78 (5390)
● **Selenoketones**
- **2-Amino-1-alkenyl Selenoketones**
- Synthesis and Cyclization Reactions 250
● **Selenols**
- **Areneselenols**
- Synthesis 300
● **Selenophene**

- Ring Synthesis 250
● **Semiacetals and Derivatives**
- ***O*-Semiacetal Halides (1-Haloalkyl Ethers)**
- Reactions 642
● **Semicarbazones**
- Cyclization Reactions 154 (5403)
● **Semisquaric Acid and Derivatives**
- Synthesis and Reactions 361
● **Silacyclopentanes**

- Ring Synthesis 783
● **Silanes**
see also: Silyl Halides
- Substitution Reactions 761 (review)
- **1,2-Alkadienylsilanes**
- Synthesis 390
- **2-Alkenylalkoxydialkylsilanes**
- Synthesis and Reactions 473 (5500)
- **2-Alkenyldialkylsilanes**
- Synthesis and Reactions 473 (5500)
- **2-Alkenylfluorosilanes**
- Synthesis and Reactions 473 (5500)
- **1-Alkenylsilanes**
- Synthesis 395 (5478), 399 (5492), 769, 828
- Epoxidation 395 (5478)
- Reactions 87, 393 (5472), 766, 774
- **2-Alkenylsilanes**
- Synthesis 398 (5490), 447, 473 (5500), 776
- Reactions 398 (5493), 447, 473 (5500), 474 (5502), 779
- **3-Alkenylsilanes**
- Reactions 782
- **1-Alkynylsilanes**
- Synthesis 390
- Reactions 390, 399 (5492), 770, 854
- **Arylselenotrialkylsilanes**
- Synthesis and Reactions 300
- **Aryltrialkylsilanes**
- Synthesis 841 (review)
- Reactions 762, 855 (review)
- **Azidotrialkylsilanes**
- Reactions 855
- **Benzylsilanes**
- Reactions 782
- **Bis-silanes**
- Synthesis 759 (5595)
- **Cyanotrialkylsilanes**
- Synthesis 522, 523
- Reactions 181, 204
- **Cyclopropylsilanes**
- Synthesis and Reactions 783
- **Disilanes**
- Reactions 740
- **Disilylacetylenes**
- Reactions 438
- ***gem*-Disilylalkanes**
- Synthesis 320 (5471)
- **1-Halo-1-alkenylsilanes**
- Synthesis 399 (5492)
- **Halotrialkylsilanes**
- Synthesis 740, 759 (5595)
- Reactions 320 (5471), 395 (5479), 522, 523, 730, 740, 749 (5567)
- **Heteroaryltrialkylsilanes**
- Synthesis 841 (review)
- **Mercaptomethylsilanes and *S*-Derivatives**
- Reactions 638
- **2-Oxoalkylsilanes**
- Synthesis and Reactions 919 (5634)
- **3-Oxoalkylsilanes**
- Synthesis 398 (5491)
- Reactions 158 (5415)
- **3-Oxo-1-alkynylsilanes**
- Synthesis and Reactions 438
- **1-Siloxy-2-alkenylsilanes**
- Synthesis and Reactions 395 (5479)
- **β-Silylcarboxylic Acid Derivatives**
- Synthesis 398 (5491)
- **Silylfurans**
- Synthesis 850, 863
- **Silylimidazoles**
- Synthesis 850
- **2-(1-Silylalkyl)-pyridines**
- Reactions 192
- **Silyl-1,2-oxazoles**
- Synthesis 855
- **Silylpyrazoles**
- Synthesis 846, 855
- **Silylpyridines**
- Synthesis 847, 849, 853
- **Silylpyrroles**
- Synthesis 850
- **Silylthiophenes**
- Synthesis 846, 850, 859, 863
- **Silyl-1,2,3-triazoles**
- Synthesis 855
- **Tetraalkylsilanes**
- Synthesis 320 (5471)
- Reactions 783
- **1,1,1-Trisilylalkanes**
- Synthesis 320 (5471)
● **Silyl Esters**
- **Silyl Alkanoates**
- Reactions 557 (5536)
- **Silyl Carbamates**
- Synthesis and Reactions 236 (5433)
- **Silyl Carboxylates, General**
- Synthesis 740
- **Silyl Sulfonates**
- Synthesis 699
● **Silyl Ethers**
- Synthesis 740
- **1-Alkenyl Silyl Ethers (Enol Silyl Ethers)**
- Synthesis 34, 237 (5438), 480 (5524), 505, 632 (5566), 730, 736, 914 (5621)
- Reactions 237 (5438), 315 (5455), 738, 914 (5621)
- **2-Alkenyl Silyl Ethers**
- Reactions 395 (5479)
- **Alkyl Silyl Ethers**
- Synthesis 379
- Oxidation 158 (5416)
- Reactions 158 (5416), 379
- **Aryl Silyl Ethers**
- Reactions 844, 852
- ***gem*-Azidosiloxy Compounds**
- Synthesis 35
- **Pyridyl Silyl Ethers**
- Reactions 853
- **2-Siloxy-1,3-alkadienes**
- Reactions 149, 156 (5408)
● **Silyl Halides**
see: Silanes (Halotrialkylsilanes)
● **Spiro Compounds**
- **Carbocyclic Spiro Compounds**
- Synthesis 645
- **Heterocyclic Spiro Compounds**
- Synthesis 369, 610, 910
- **Spirocyclic Acetals**
- Synthesis 369
● **Squaric Acid and Derivatives**
- Synthesis and Reactions 361
● **Stannanes**
- **1,3-Alkadienylstannanes**
- Synthesis and Reactions 158 (5417)
- **Tetraorganostannanes, General**
- Reactions 477 (5511)
● **Steroids and Relatives**



- **5-Acetoxy-6-nitrosteroids**
- Synthesis 125
- **6-Acetoxy-6-nitrososteroids**
- Synthesis 125
- **5,9-Cyclosteroids**
- Synthesis 7
- **Ergosterol and Relatives**
- Reactions 265
- **A-Nor-steroid-2-carboxaldehydes**
- Synthesis 410
- **Olefinic Steroids**
- Synthesis 314 (5451)
- **6-Oximinosteroids**
- Reactions 125
- **20-Oxosteroids [16α,17α-*d*]-fused to Five-membered Heterocyclic Rings**
- Synthesis 592
- **Steroidal Alcohols**
- Oxidation 404–409
- **Steroidal Conjugated Dienes**
- Synthesis 314 (5451)
- Isomerization 265
- **Steroidal α,β-Epiminoketones**
- Reactions 592
- **Steroidal Epoxides**
- Reactions 315 (5453)
- **Steroidal α-Hydroxyketones**
- Reactions 315 (5453)
● **Stilbenes**
- Synthesis 712
- Reduction 31
● **Styrenes**
- Reactions 310
- ***o*-Aminostyrenes**
- Synthesis 835 (5601)
● **Sulfenic Acid Amides**
- Synthesis 228
- Reactions 97, 98
● **Sulfenic Acid Chlorides**
- Synthesis 181
- Reactions 181, 228
● **Sulfilimines**
- Synthesis 596
- Reactions 289, 632 (5565)
● **Sulfines**
- Synthesis 748

● Sulfinic Acid Amides
- Synthesis 97
● Sulfinic Acid Esters
- Reactions 535
● Sulfinic Acids
- Reactions 446, 733
● *N*-Sulfinobetaines
- Reactions 36, 984
● Sulfinylamines
- Reactions 96
● *N*-Sulfobetaines
- Reactions 984
● Sulfone Diimines
- Synthesis 289
● Sulfones
- 1-Alkenyl 1-Alkynyl Sulfones
- Synthesis and Reactions 47
- 2-Alkenyl Aryl Sulfones
- Synthesis 445, 625 (5545)
- 1-Alkenyl Sulfones
- Synthesis 768, 840 (5616)
- 2-Alkenyl Sulfones
- Synthesis 781
- Alkyl Aryl Sulfones
- Synthesis 445, 461, 625 (5544), 733
- Reactions 461, 916 (5625)
- 1-Alkylthioalkyl Sulfones
- Synthesis 240 (5445)
- 1-Alkynyl Sulfones
- Reactions 625 (5544) (5545)
- 1-Amino-1-alkenyl Sulfones
- Synthesis 648
- Bis[1-alkenyl] Sulfones
- Reactions 86
- Cyclic Sulfones
- Synthesis 47, 934
- Reactions 934
- Dialkyl Sulfones
- Synthesis and Reactions 461
- Diaryl Sulfones
- Synthesis 856
- 1,2-Epoxyalkyl Sulfones
- Synthesis and Reactions 395 (5480)
- 1-Haloalkyl Sulfones
- Synthesis and Reactions 835 (5601)
- 1-Hydroxyalkyl Sulfones and *O*-Derivatives
- Synthesis and Reactions 999 (5657)
- 2-Hydroxyalkyl Sulfones
- Synthesis and Reactions 916 (5625)
- 2-Oxoalkyl Sulfones
- Reactions 397 (5486), 840 (5616)
- 2-Sulfonyl-1-alkenes
- Synthesis 397 (5486), 840 (5616)
- Styryl Sulfones
- Synthesis and Reactions 916 (5625)
● Sulfonic Acid Amides
- Alkanesulfonamides
- Synthesis and Reactions 461
- 3-Alkenesulfonamides
- Synthesis 461
- *N*-Alkylsulfonamides
- Reactions 100
- Arenesulfonamides
- Synthesis 171
- *N,N*-Bis[hydroxymethyl]-sulfonamides and *O*-Derivatives
- Synthesis 171
- Difluorohalomethanesulfonamides
- Synthesis 973
- 2,2-Dihaloalkanesulfonamides
- Synthesis and Reactions 462
- 2-Haloalkanesulfonamides
- Synthesis 462
- *N*-Sulfonylheterocyclic Compounds
- Synthesis 136
● Sulfonic Acid Azides
- Synthesis 207
- Reactions 596
- Difluorohalomethanesulfonyl Azides
- Synthesis 973
● Sulfonic Acid Chlorides
- Reactions 80 (5396), 822, 856
● Sulfonic Acid Esters
- Synthesis 822
- Alkyl Sulfonates
- Reactions 178
- 2-Alkynyl Sulfonates
- Reactions 293
- Aryl Difluorohalomethanesulfonates
- Synthesis 972
- *gem*-Bis[trifluoromethanesulfonates]
- Synthesis and Reactions 382
- Bridgehead-bicycloalkyl Sulfonates
- Synthesis 54
- 2-Sulfonyloxy-1-alken-3-ynes
- Synthesis 438
● Sulfonic Acid Fluorides
- 2-Bromo-1,1-difluoro-2-oxoethanesulfonyl Fluoride
- Synthesis and Reactions 972
- Difluorohalomethanesulfonyl Fluorides
- Synthesis and Reactions 972
● Sulfonic Acid Imides
- Synthesis 80 (5396)
● Sulfonic Acids
- Synthesis 320 (5470)
- Arenesulfonic Acids
- Synthesis 856, 921
- Difluorohalomethanesulfonic Acids
- Synthesis 972
- 2-Oxoalkanesulfonic Acids
- Synthesis 699
● Sulfonium Salts
- Acyloxymethylsulfonium Salts
- Synthesis and Reactions 999 (5657)
- Alkoxyaminosulfonium Salts
- Synthesis 98
- Halodialkylsulfonium Salts
- Reactions 1000 (5659)
● Sulfonothioic Acid Esters
- Cyclic *S*-Esters
- Reactions 1000 (5660)
- Open-chain *S*-Esters
- Synthesis 320 (5470)
● Sulfoxides
- Synthesis 39, 417
- Deoxygenation 58, 61, 984
- 1,2-Alkadienyl Sulfoxides
- Reactions 753 (5579)
- 1-Alkenyl 1-Alkynyl Sulfoxides
- Synthesis and Reactions 47
- 2-Alkenyl Aryl Sulfoxides
- Reactions 746
- Aryl 1-Sulfonylalkyl Sulfoxides
- Synthesis 535
- Dialkyl Sulfoxides
- Reactions 398 (5489)
- 1-Haloalkyl Sulfoxides
- Reactions 19
- Heterocyclic Sulfoxides
- Synthesis 47
- 2-Hydroxy-1-alkenyl Sulfoxides and *O*-Derivatives
- Synthesis and Reactions 753 (5579)
● Sulfuranes
- Reactions 400 (5495)
● Sulfuran *S*-Oxides
- Reactions 641
● Sulfur Diimides
- Reactions 980

● Terpenes
- Monoterpenes
- Synthesis 736
- Reactions 799
- Sesquiterpenes
- Synthesis 698
- Reactions 898
- Terpenoid Enamines
- Synthesis 830
- Terpenoid Nitrimines
- Reactions 830
● 1,3,5,7-Tetraazabicyclo[3.3.1]nonane

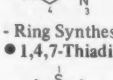
- Ring Synthesis 169, 170
● Tetracyanoethylene
- Reactions 781
● 1,3,5,7-Tetrazocine

- Octahydro-1,3,5,7-tetrazocines
- Ring Synthesis 169
- Ring Cleavage 171
● Tetronic Acids
- Synthesis and Reactions 808, 977
● 1,4,8-Thiadiazecine
- 5,6,7,8-Tetrahydro-2*H*-1,4,8-thiadiazecines
- (Ring Synthesis) 46 (see correction on p. 623)
● 1,2,3-Thiadiazole

- Ring Transformation 470
● 1,2,5-Thiadiazole

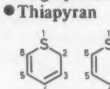
- Ring Synthesis 524
- Anellation Reactions 687
- Ring Transformation 979
● [1,2,4]-Thiadiazolo[2,3-*a*]pyridine

2*H*-
- [1,2,4]Thiadiazolo[2,3-*a*]pyridinium Salts
- Ring Synthesis 591
● [1,2,5]Thiadiazolo[3,4-*c*]pyridine



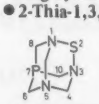
- Ring Synthesis 687
● 1,4,7-Thiadiazonine

- 2,5,6,7-Tetrahydro-1,4,7-thiadiazonines
- Ring Synthesis 46
● Thiapyran



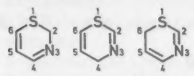
2*H*- 4*H*-
- Thiapyrylium Salts
- Ring Synthesis 249
● 1,4-Thiaselenin

- Dihydro-1,4-thiaselenins
- Ring Synthesis 47
● 2-Thia-1,3,5-triaza-7-phosphaadamantanes



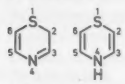
- Ring Synthesis 169
● 1,2,3,4-Thiatriazole

- Ring Synthesis 35
● 1,3-Thiazine



2*H*- 4*H*- 6*H*-

- 1,3-Thiazinium Salts
- Ring Synthesis 259
● 1,4-Thiazine

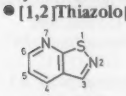


2*H*- 4*H*-

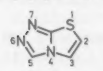
- 3,4-Dihydro-2*H*-1,4-thiazines
- Ring Synthesis 47, 272
● 1,2-Thiazole

- 1,2-Thiazoles
- Anellation Reactions 370
- 1,2-Thiazolium Salts
- Ring Synthesis 249
● 1,3-Thiazole

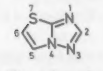
- 1,3-Thiazoles
- Ring Synthesis 215
- *N*-Alkylation 272
- 1,3-Thiazolium Salts
- Synthesis and Ring Transformation 272
● [1,2]Thiazolo[5,4-*b*]pyridine



- Ring Synthesis 370
● [1,3]Thiazolo[2,3-*c*][1,2,4]triazole

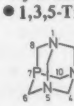


- Ring Synthesis 52
● [1,3]Thiazolo[3,2-*b*][1,2,4]triazole



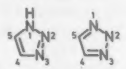
- Ring Synthesis 52
● Thiocarbonic Acid Esters
- *O,S*-Dialkyl Thiocarbonates
- Synthesis 600
- Reactions 601
● Thiocarboxylic Acid Amides
- Cyclization Reactions 591
- Reactions without Cyclization 479 (5118)
- Alkanethioamides
- Synthesis 887
- Cyclization Reactions 258
- Reactions without Cyclization 455, 917 (5626)
- Arenethiocarboxamides
- Reactions without Cyclization 359
- *N*-(1-Hydroxyalkyl)-thiocarboxamides and *O*-Derivatives
- Cyclization Reactions 801
- 2-Imino-3-oxoalkanethioamides
- Synthesis and Cyclization Reactions 794
- 5-Oxoalkanethioamides
- Synthesis and Reactions 917 (5626)
● Thiocarboxylic Acid Esters
- Alkanethioic *O*-Esters
- Reactions 455
- Alkanethioic *S*-Esters
- Synthesis 648
- *S*-Aryl Thiocarboxylates
- Synthesis 480 (5523), 757 (5592)
- *O*-Esters, General
- Synthesis 396 (5482)
- *S*-Esters, General
- Synthesis 394 (5475), 397 (5487), 479, 999 (5655)
- Reactions 396 (5482)
● Thiocyanates
- Synthesis 181
- Alkyl Thiocyanates
- Synthesis 79 (5394), 142
- Aryl Thiocyanates
- Reactions without Cyclization 480 (5523)
- Triarylphosphine Thiocyanates
- Reactions 887
● Thioethers
- Synthesis 58, 61, 567, 920 (5636), 984
- Oxidation 39, 417
- Reactions 596
- 1-Alkenyl Sulfides
- Synthesis 638
- Reactions 638, 754 (5582), 915 (5622)
- Alkyl Aryl Sulfides
- Synthesis 559 (5539)
- Reactions 320 (5471), 840 (5614)
- Alkyl Benzyl Sulfides
- Synthesis and Reduction 839 (5611)
- Reactions 839 (5613)
- Alkyl Hydroxyaryl Sulfides
- Synthesis 606
- 1-Alkynyl Sulfides
- Reactions 997 (5651)
- 2-Alkynyl Sulfides
- Synthesis 882
- *o*-Aminodiaryl Sulfides
- Reactions 589
- Aryl Benzyl Sulfides
- Synthesis 840 (5614)
- Reactions 837 (5605), 840 (5614)
- Cyclic Sulfides
- Oxidation 934
- Dialkyl Sulfides
- Synthesis 178, 559 (5540) (5541)
- Reactions 559 (5540) (5541)
- Diaryl Sulfides
- Synthesis 480 (5522)
- 2-Hydroxyalkyl Sulfides
- Synthesis 482
● Thioketones
- 2-Amino-1-alkenyl Thioketones
- Synthesis 249, 941
● Thiolactams
- Synthesis 248
● Thiols (Mercaptans)
see also: Dithiols
- Reactions 320 (5470), 394 (5475), 567, 721, 882, 999 (5655)
- Alkanethiols
- Synthesis 632 (5564)
- *o*-Aminoarenethiols
- Reactions 337, 682
● Thiophene

- Thiophenes
- Ring Synthesis 214, 256
- Anellation Reactions 195
- 2,5-Dihydrothiophene 1,1-Dioxides
- Ring Synthesis 817
- Ring Cleavage 118, 817
● Thiosemicarbazones
- Reactions without Cyclization 53
● Thiosulfonic Acid Esters
see: Sulfonothioic Acid Esters
● Thioureas
- Synthesis 356
● 1,3,5-Triaza-7-phosphaadamantanes



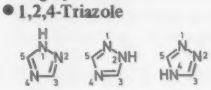
- Ring Synthesis 168
● 1,3,5-Triazine

- 1,3,5-Triazines
- Ring Synthesis 690
- Hexahydro-1,3,5-triazines
- Ring Synthesis 168, 169
- Ring Cleavage 810
● 1,2,3-Triazole



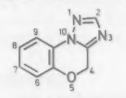
2*H*-

- 1,2,3-Triazoles
- Ring Synthesis 470, 855, 938
- 2*H*-1,2,3-Triazoles
- Ring Synthesis 855, 977
● 1,2,4-Triazole



2*H*- 4*H*-

- 1,2,4-Triazoles
- Ring Synthesis and Anellation 53
- 4*H*-1,2,4-Triazoles
- Ring Synthesis 359
- 4,5-Dihydro-1*H*-1,2,4-triazoles
- Ring Synthesis 359
● [1,2,4]Triazolo[5,1-*c*][1,4]benzoxazine



4*H*-

- Ring Synthesis 909
● Tribenzo[*c,g,m*][1,2,5,6,9,12]hexaazacyclotetradecine
- 17,18,19,20-Tetrahydro Derivatives
- Ring Synthesis 545
● Triols
- Oxidation 404
● 2,4,10-Trioxadamantanes

- Ring Synthesis 683
● 2,3,7-Trioxabicyclo[2.2.1]heptanes

- Ring Synthesis and Reductive Cleavage 383
● Trisulfides
- Reactions 1000 (5660)
● Trithioorthocarboxylic Acid Esters
- Synthesis 683
- Reduction 20
● Trithioperesters
see: Carbotrithioperoxoic Acid Esters

● Urea Dihalides
- Synthesis 339
- Reactions 215, 339
● Ureas
- Synthesis 356, 571
- Cyclization Reactions 287
- *N*-Acyl-*N'*-sulfonylureas
- Synthesis 293
- 2-Alkynoylureas
- Synthesis 104
- *N,N'*-Bis[2-alkenyl]-ureas
- Synthesis 142
- *N,N'*-Carbonyl-bis[amino acids]
- Synthesis 735

- *N,N'*-Dialkylureas
- Synthesis 141, 739
- *N,N'*-Dialkylideneureas
- Reactions 739
- Urea
- Synthesis 164

● Vinamidinium Salts
- Synthesis and Reactions 214, 215
● Vinylogous Amidinium Salts
see: Iminium Salts

● Vinylogous Carboxamides
see: Ketones (2-Amino-1-alkenyl Ketones)
● Vinylogous Thiocarboxamides
see: Thioketones (2-Amino-1-alkenyl Thioketones)

● Xanthines
- Synthesis and Anellation Reactions 581

● Ylides
see also: Phosphoranes, Sulfuranes, etc.

- *N*-(Dicyanomethylene)-pyridinium Ylides
- Reactions 746
● Ynamines
- Reactions without Cyclization 88, 840 (5615)
● Yomogi Alcohol
- Synthesis 6

REACTION INDEX

● Acetal Cleavage
- *O,O*-Acetals
- Hydrolytic or Solvolytic Cleavage 132, 416, 604, 620
- with Pyridinium Tosylate 724
- *O,S*-Acetals
- with Alkyl Nitrites 753 (5581)
- *S,S*-Acetals
- with Alkyl Nitrites 753 (5581)
- with Bromodimethylsulfonium Bromide 720
- with Mercury Compounds 630 (5551), 753 (5580), 839 (5612)
- with Sulfuryl Chloride/Water 416
- *Se,Se*-Acetals
- with Copper(II) Compounds/Water 877
- with Mercury Compounds/Water 877
● Acetalization
- Aldehydes and Ketones
- with Alkanedithiols 184, 541
- with Diols 541, 626 (5549), 724, 975
- with 1,3,2-Dithiaborolanes 920 (5635)
- with Selenols 877
- 2-Alkenals
- with Diols 132
● *C*-Acylation
- Allylic Replacement of Si-Functions 395 (5479), 447, 779
- Reductive Acylation of C=C Groups 557 (5534), 917 (5626)
- Replacement of Hydrogen 303, 861
- Replacement of Hydrogen via Metallation 130, 160 (5421), 295, 318 (5463), 752 (5576), 756 (5589), 787, 954
- Replacement of Metal Substituents 159 (5420), 318 (5462), 477 (5511), 610, 861
- Replacement of *Si*-Functions 438, 765, 768
● *N*-Acylation
- Diacylation of NH_2 Groups 835 (5601)
- Replacement of Hydrogen 170, 387, 587, 726, 916 (5624)
● *O*-Acylation
- Replacement of Enolic Hydrogen 505
- Replacement of Hydrogen 821, 916 (5624), 939
● *S*-Acylation
- Replacement of Hydrogen 238 (5439)
● *C*-Acyloxylation
- Replacement of Halogen 53, 518
- Replacement of Hydrogen 898
● Acyloxynitrosation
- Alkenes 155 (5407)
● *C*-Acylthiolation
- Replacement of Halogen 810
● Aldehyde-Nitrile Conversion 112, 722
● Aldol Reaction 187
● *C*-(1-Alkenylation)
- α-(1-Alkenylation) of Metal Complexes of β-Dicarbonyl Compounds 349
- Reductive 1-Alkenylation of Aldehydic or Ketonic Carbonyl Groups 631 (5562)
- Reductive 1-Alkenylation of C=C Groups 737
- Replacement of Halogen 234 (5428), 477 (5511), 626 (5547)
● *C*-(2-Alkenylation)
- 2-Alkenylation of Oxiranes with Ring Cleavage 837 (5606)
- Reductive 2-Alkenylation of Aldehydic and Ketonic Carbonyl Groups 6, 627 (5552), 800
- Reductive 2-Alkenylation of Arenes 185
- Reductive 2-Alkenylation of Quinone Carbonyl Groups 474
- Replacement of Halogen 626 (5547)
- Replacement of Hydrogen 461, 464
- Replacement of Hydrogen via Metallation 159 (5419), 493, 516, 630 (5559)
● *N*-(2-Alkenylation)
- Replacement of Hydrogen via Metallation 628 (5555)
- Replacement of O-Functions 629 (5558)
● *O*-(2-Alkenylation)
- Replacement of Metals 203
● *C*-(3-Alkenylation)
- Replacement of Hydrogen via Metallation 630 (5559)
● *N*-Alkoxycarbonylation
- Replacement of Hydrogen 387
● *O*-Alkoxycarbonylation
- Replacement of Hydrogen 320 (5469)
● *C*-Alkoxycarbonylmethylation (Introduction of an Acetic Ester Synthon)
- Reductive Substitution of C=C Double Bonds 239 (5442)
● *C*-Alkoxylation
- Alcohol Addition to C=C Groups 819
- Replacement of Halogen 54, 319 (5465), 587, 622
- Replacement of Hydrogen 158 (5416)
- Replacement of Other O-Functions 364
- Replacement of S-Functions 631 (5563), 916 (5625)
● *S*-Alkoxylation 98
● *Si*-Alkoxylation
- Replacement of Hydrogen 473 (5500)
● *C*-Alkoxymethylation
- Replacement of Halogen 503
● Alkoxynitrosation
- Alkenes 155 (5407)
● *C*-Alkylation
- α-Alkylation of Metal Complexes of β-Dicarbonyl Compounds 349
- Allylic Replacement of O-Functions 234 (5429), 475 (5504), 476 (5508), 886
- Allylic Replacement of Si-Functions 447, 779
- Indirect Replacement of Hydrogen 237 (5438), 839 (5611), 929
- Reductive Alkylation of Aldehydic or Ketonic Carbonyl Groups 610, 708, 942
- Reductive Alkylation of Arenes 185
- Reductive Alkylation of C=C Groups 155 (5406)
- Reductive Alkylation of C≡C Groups 235 (5431), 625 (5544) (5545)
- Reductive Alkylation of C=N Groups 157 (5414)
- Reductive Alkylation of Ester Groups 608
- Replacement of Aldehydic Hydrogen 969
- Replacement of Enolizable Hydrogen 78 (5388) (5390), 315 (5455)
- Replacement of Halogen 209, 235 (5431), 477, 865, 988
- Replacement of Hydrogen 156, (5410), 461, 495, 616, 629 (5556), 669, 994 (5642)
- Replacement of Hydrogen via Borylation 146
- Replacement of Hydrogen via Metallation 33, 127, 130, 139, 153 (5399) (5400), 192, 318 (5463), 493, 516, 554 (5527), 630 (5559) (5561), 752 (5576), 797, 998 (5654)
- Replacement of Metal Substituents 826, 859
- Replacement of N-Functions 45, 511, 553 (5525)
- Replacement of O-Functions 159 (5420), 473 (5500), 476 (5508), 993 (5639)
- Replacement of Propargylic O-Functions 390, 750 (5571)
● *N*-Alkylation
- Additive Alkylation to give $N^{\oplus}$ Salts 162, 272
- of *N*-Heterocyclic Compounds giving Cyclic Iminium Salts 157 (5414), 159 (5418)
- Replacement of Hydrogen 217, 470, 528, 551, 568, 617, 741, 920 (5636), 944

- Replacement of Hydrogen via Metallation 628 (5555)
- Replacement of O-Functions 629 (5558)
● ***O*-Alkylation**
- Anthrones 177
- Replacement of Enolic Hydrogen 505, 898
- Replacement of Hydrogen 920 (5636)
● ***S*-Alkylation**
- Additive Alkylation to give Onium Salts 887
- of Thioate Salts 80 (5395)
- Replacement of Hydrogen 567, 920 (5636)
- Replacement of O-Functions 535
- Thioxo Compounds 361
● ***Si*-Alkylation**
- Replacement of Halogen 473 (5500)
● ***C*-Alkylidenation**
see also: Carbonyl Olefination
- Carbonyl-Methylene Condensation 107, 291, 803, 916 (5625), 918 (5630)
● ***C*-Alkylsulfenylation**
- of Quinone Acetals 606
- Replacement of Halogen 178, 319 (5465), 559 (5540) (5541)
- Replacement of Hydrogen 631 (5563)
- Replacement of O-Functions 364
● ***N*-Alkylsulfenylation**
- Replacement of Hydrogen 228
● ***S*-Alkylsulfenylation**
- Replacement of Hydrogen via Metallation 130
- Replacement of Metals 971
● ***C*-(1-Alkylthioalkylation)**
- Replacement of Hydrogen 837 (5605), 839 (5611)
● ***C*-(1-Alkynylation)**
- Reductive 1-Alkynylation of Aldehydic and Ketonic Carbonyl Groups 836 (5603)
- Reductive 1-Alkynylation of C=C Groups 313 (5448)
- Replacement of Halogen 76 (5382), 438, 860
- Replacement of Metal Substituents 829
● ***S*-(2-Alkynylation)**
- Replacement of Hydrogen 53, 882
● ***C*-Allenylation**
- Replacement of Hydrogen via Metallation 832
● **Amidation**
- **Acyl Halides**
- with Hexahydro-1,3,5-triazines 810
- **Carboxylic Acids**
- with Ammonia or Amines 195, 355, 396 (5483), 479 (5519)
- **Carboxylic Anhydrides**
- with Ammonia or Amines 457
● ***C*-Amination**
- Diamination of C=C Groups 962
- Indirect Replacement of Halogen 751 (5575)
- Replacement of Cyano Groups 342
- Replacement of Halogen 319 (5465), 602, 818
- Replacement of Hydrogen (Oxidative Amination) 695, 980
- Replacement of O-Functions 497, 718, 741
- Replacement of Other N-Functions 830
● ***C*-Aminocarbonylation**
- Replacement of Si-Functions 768
● ***N*-Aminocarbonylation**
- Replacement of Hydrogen 387
● **Aminocarboxylation**
- Reductive Aminocarboxylation of Aldehydes 26
● **Aminohydroxylation**
- Alkenes 316 (5457), 394 (5476), 476 (5509)
● **Aminomercuration** 962
● ***C*-Aminomethylation**
- Reductive Aminomethylation of Aldehydic and Ketonic Carbonyl Groups 156 (5409), 424
- Replacement of Halogen 156 (5409)
● ***C*-Aminomethylenation**
- Replacement of Hydrogen 376
● **Aminonitrosation**
- Alkenes 155 (5407)
● **Anion Exchange**
- Quaternary Aminium Salts and Pyridinium Salts 752 (5577)
● **Arbuzov Reaction**
see: Michaelis-Arbuzov Reaction
● **Aromatization of Cyclic Systems**
- Isomerization of Cyclohexene Derivatives 434
- Thermal or Catalyic Dehydrogenation 987
● ***C*-Arsination**
- Replacement of O-Functions 351
● ***C*-Arylation**
- Allylic Replacement of O-Functions 234 (5429), 475 (5504), 476 (5508)
- Reductive Arylation of Aldehydic or Ketonic Carbonyl Groups 698, 860
- Reductive Arylation of Ester Groups 608
- Replacement of Halogen 477 (5511), 626 (5547)
- Replacement of Metal Substituents 76 (5382)
- Replacement of O-Functions 159 (5420), 476 (5508), 993 (5639) (5640)
- Replacement of Propargylic O-Functions 390
● ***N*-Arylation**
- Replacement of O-Functions 629 (5558)
● ***Si*-Arylation**
- Replacement of Hydrogen 842
● ***O*-Aryloxycarbonylation**
- Replacement of Hydrogen 320 (5469)
● **Aryloxyiodination**
- Alkenes 67
● ***C*-Aryloxylation**
- Replacement of Halogen 319 (5465), 823
- Replacement of Other O-Functions 364
● ***S*-Aryloxylation**
- Replacement of Halogen 973
● ***C*-Arylselenylation**
- Arylselenylation of C=C Groups 78 (5390), 301, 982
- Replacement of Hydrogen 983
● ***C*-Arylsulfenylation**
- Arylsulfenylation of C=C Groups 516
- Oxidative Arylsulfenylation 480 (5522)
- Replacement of Carbon Groups 559 (5539)
- Replacement of Enolic Si-Functions 836 (5604), 914 (5621)
- Replacement of Halogen 319 (5465), 925
- Replacement of Hydrogen 228
- Replacement of Hydrogen via Metallation 621
- Replacement of O-Functions 882
● ***C*-Arylthiomethylation**
- Replacement of Hydrogen 840 (5614)
● **Asymmetric Synthesis**
- **Alcohols**
- in the Presence of Chiral Additives 629 (5557)
- **α-Aminocarboxylic Acids**
- in the Presence of Chiral Catalysts 351
- using Chiral Reaction Components 80 (5398)
- **Chiral Crown Ethers**
- using Chiral Reaction Components 458
- **α-Hydroxyaldehydes**
- using Chiral Reaction Components 837 (5607)
- **Ketones**
- using Chiral Reaction Components 209
- **Phosphinic Esters**
- using Chiral Reaction Components 110
- **Sulfoxides**
- using Chiral Reaction Components 535
● **Azo Coupling**
- **Arenediazonium Salts**
- with Arenes 857
- with *O*-Heterocyclic Compounds 284
- with Nitroalkanes 380
● **Baeyer-Villiger Reaction** 50
● **Beckmann Fragmentation** 479 (5520)
● **Beckmann Rearrangement** (537)
● **Benzylation**
see also: Alkylation
● ***C*-Benzylation**
- Indirect Replacement of Hydrogen 837 (5605)
- Replacement of Hydrogen 518
- Replacement of Hydrogen via Metallation 159 (5419)
● ***C*-Bromination**
- Additive Bromination of C=C Groups in Non-conjugated Dienes 964, 967
- Indirect Replacement of Si-Functions 784
- Replacement of Hydrogen 65, 489, 507, 627 (5550), 855, 931, 990
- Replacement of Metal Substituents 990
- Replacement of O-Functions 53, 749 (5567)
- Replacement of Si-Functions 856, 763, 767
● ***Hg*-Bromination**
- Replacement of O-Functions 990
● ***N*-Bromination**
- Replacement of Hydrogen 577
● **Carboalumination**
- Alkynes 501 [cf. 1035]
● **Carbonylation**
- **Amino Acid Esters**
- with Carbon Monoxide/Selenium/Amines 735
- **Boranes**
- with Carbon Monoxide 701
- **Organomagnesium Halides**
- with Metal Carbonyls or Carbonylmetallates 79 (5391)
● **Carbonyl Olefination**
- **Olefination of Aldehydes and Ketones**
- with *O*-Alkyl *S*-(1-Lithioalkyl) Thiocarbonates 240 (5446)
- with *O,S*-Dialkyl Dithiocarbonates 890
- with Dibromomethane/Zinc/Titanium(IV) Chloride 313 (5450)
- with Diiodomethane/Zinc/Trimethylalane 317 (5459)
- with 1-Lithioalkylsilanes 79 (5392), 192, 638, 640, 652, 655, 772
- with Phosphonic Acid Esters 555 (5529), 638, 712, 884
- with Phosphoranes or Phosphonium Salts 132, 201, 266, 447, 643, 658, 659, 778, 904, 906
- with *O,O,S*-Trialkyl Phosphorothioates 890
- **Olefination of Lactones**
- with Phosphonic Acid Esters 920 (5637)
- **Olefination of 1-Oxoalkanephosphonic Esters**
- with Phosphoranes or Phosphonium Salts 147
● **Carbonyl 1,2-Transposition** 14, 395 (5478)
● ***C*-(1-Carboxyalkylation)**
- Reductive 1-Carboxyalkylation of Alkenes 310
● ***C*-(2-Carboxyalkylation)**
- Reductive 2-Carboxyalkylation of Aldehydic and Ketonic Carbonyl Groups 160 (5422)
● **Carboxylation**
see: Hydroxycarbonylation
● **Chain-Elongation Reactions of Carbonyl Compounds** 633 (review)
● ***C*-Chlorination**
- of Quinone Acetals 606
- Replacement of Hydrogen 233 (5426), 417, 462, 488, 529, 580, 627 (5550), 817, 931

- Replacement of Hydrogen via Metallation 296
- Replacement of N-Functions 627 (5551)
- Replacement of O-Functions 209, 361, 518, 534, 587, 913 (5617), 971
- Replacement of Other Halogens 488
- Replacement of Si-Functions 393 (5473), 767
- **●*N*-Chlorination**
- Replacement of Hydrogen 918 (5629)
- **●Chlorination-Trichloromethylation** 239 (5443)
- **●*C*-Chloromethylation**
- Replacement of Hydrogen 929, 930, 931, 934
- **●Claisen-Cope Rearrangements** 394 (5477), 644, 750 (5572), 753 (5579), 754 (5584), 840 (5615), 997 (5651)
- **●Claisen Orthoester Rearrangement** 317 (5460), 319 (5467)
- **●Cleavage of Functional Groups**
- **Acetals**
see: Acetal Cleavage
- **Carboxamides**
- Hydrolytic Cleavage 628 (5555)
- **Enethiol Ethers**
- with Mercury Compounds 638
- **●*C–C* Coupling Reactions**
- to give Aldehydes, Ketones, or Carboxylic Acid Derivatives 633 (review)
- *see also: C*-Acylation, *C*-Alkenylation, *C*-Alkylation, *C*-Arylation, etc.
- **●*C–P* Coupling Reactions** 81 (review)
- **●Curtius Degradation** 584
- **●*C*-Cyanation**
- Replacement of Halogen 54, 204, 319 (5465), 339, 396 (5484)
- Reductive Cyanation of C=C Groups 716
- **●*S*-Cyanation**
- Replacement of Halogen 181
- **●*Si*-Cyanation**
- Replacement of Halogen 523, 524
- **●Cycloaddition (intermolecular)**
- General, using Hexamethylenetetramine as Component 171 (review)
- **[2+1] Cycloaddition**
see also: Cyclopropanation
- C–C + C 625 (5546)
- **[2+2] Cycloaddition**
- C–C + C–C 689, 838 (5610)
- **[2+2+2]-Cycloaddition**
- N–C + C–C + C–C 525
- **[3+2] Cycloaddition**
- N–N–N + S–C 35
- N–N–N + C–C 855, 938
- O–N–C + N–C 413
- O–N–C + C–C 855
- N–C–C + N–C 794
- C–N–C + O–C 216
- N–C–C + C–C 854
- **[4+1] Cycloaddition**
- C–C–C–C + S 817
- **[4+2]-Cycloaddition**
- C–C–C–C + N–C 756 (5588)
- C–C–C–C + O–C 41
- C–C–C–C + C–C 43, 75 (5381), 76 (5383), 118, 149, 270, 415, 516, [854, 987]
- **[5+1]-Cycloaddition**
- C–C–P–C–C + N 109
- C–C–S–C–C + N 47
- C–C–S–C–C + S 47
- C–C–S–C–C + Se 47
- **●Cycloaddition (intramolecular)**
- **General, C →C**
- *N*-(ω-Dibenzylaminoalkyl)-phthalimides, Photochemical Cyclization 381
- S–C–N–C–C
- *S*-(2-Alkynyl)-isothioureas + Acid or Base 53
- N–C–C–C–C
- 3-Alkenamines, Mercuration 891
- O–C–C–C–C
- 3-Alkenols, Mercuration 891
- O–C–C–O–C–C
- *vic*-Divinyloxyalkanes + Dialkyl Hydrogen Phosphites 87
- N–C–C–C–C–C
- 4-Alkenamines, Mercuration 891
- O–C–C–C–C–C
- 4-Alkenols, Mercuration 891
- 2-Alkynyl Aryl Ethers, Photochemical Cyclization 715
- C–C–C–C–C–C
- 5-Aryl-2-alkylthio-1(or 2)-alkenes + Acid 915 (5622)
- **C_7 Ring**
- 6-Alkenals, Treatment with Silica Gel 416
- **●Cyclocondensation (intermolecular)**
- General, Diketones + Diamines 46
- to give the Bicyclo[3.3.1]nonane Ring System 321
- O–C–C
- O–C + C 395 (5480), 400 (5495)
- C–C–C
see also: Cyclopropanation
- C–C + C 156 (5410), 751
- N–C–C–C
- N–C + C–C 211, 544
- C–C–C–C
- C–C + C–C 693
- N–N–N–N–C
- N–N–N + N–C 587
- N–N–C–N–C
- N–N–C–N + C 359
- S–N–C–C–N
- N–S–N + C–C 524
- Se–N–C–C–N
- N–C–C–N + Se 980
- N–N–C–C–C
- C–C–C + N–N 254, 385, 586, 681, 682
- N–C–N–C–C
- N–C + C–C + N 172
- N–C–N + C–C 595
- N–C–C–N + C 593, 748
- O–N–C–C–C
- C–C–C + O–N 385
- O–C–N–C–C
- O–C–C–N + C 593
- O–C–O–C–C
- O–C–C–O + C 351
- S–C–N–C–C
- S–C–C–N + C 593
- Se–C–N–C–C
- Se–C–N + C–C 66
- N–C–C–C–C
- C–N–C + C–C 746
- N–C–C + C–C 728
- C–C–C + N–C 548
- C–C–C–C + N 172, 353, 865
- O–C–C–C–C
- O–C–C + C–C 189, 400 (5496)
- C–C–C + O–C 160 (5423), 474 (5502), 755 (5587)
- S–C–C–C–C
- S–C–C + S–C 297
- C–C–C–C–C
- C–C–C + C–C 160 (5423), 752 (5578)
- N–N–C–N–C–C
- N–C–C–N–C + N 587
- N–C–N–C–N–C
- N + N + N + C + C + C 690
- O–B–O–C–C–C
- O–C–C + B–O + C 366
- O–C–S–C–N–C
- N–C–S–C + O–C 801
- N–N–C–C–C–C
- C–C–C–C + N–N 385
- N–C–N–C–C–C
- N–C–N + C–C + C 287
- N–C–N + C–C–C 287
- N–C–C–C + N–C 121, 173
- N–C–C–C–N + C 346
- C–N–C–C–C + N 803
- N–C–C–N–C–C
- C–C + C–C + N + N 681
- N–C–C–N–C + C 587
- O–C–N–C–C–C
- O–C–C + N–C + C 117
- N–C–C–C + O–C 440
- O–C–C–N–C–C
- O–C–C–N + C–C 541
- O–C–O–C–C–C
- O–C + O–C + C + C 219
- O–C–C–C–O + C 910
- O–C–C–O–C–C
- O–C–C + O–C–C 610
- S–C–C–N–C–C
- S–C–C–N + C–C 682
- S–C–S–C–C–C
- S–C–C–C–S + C 184
- N–C–C–C–C–C
- N–C–C + C–C–C 257, 345, 370, 449
- N–C–C–C + C–C 257, 682
- C–C–C–C + N–C 687
- N–C–C–C–C + C 195
- C–C–N–C–C + C 257
- C–C–C–C–C + N 172, 377
- O–C–C–C–C–C
- O–C–C + C–C–C 126
- C–C–C–C + O–C 732
- C–C–C–C–C + O 418
- S–C–C–C–C–C
- S–C–C + C–C–C 258
- S–C–C–C + C–C 249
- C–C–C–C–C–C
- C–C–C + C–C–C 107
- C–C–C–C + C–C 122, 987, 997 (5652)
- N–C–C–N–C–C–C
- N–C–C–N + C–C–C 337
- N–C–C–N–C–C + C 589
- C–C–N–C–C–C + N 175
- O–C–C–N–C–C–C
- O–C–C–N + C–C–C 337
- C–C–O–C–C–N + C 589
- S–C–C–N–C–C–C
- S–C–C–N + C–C–C 337
- C–C–S–C–C–N + C 589
- C–C–C–C–C–C–C
- C–C–C–C–C–C + C 981
- S–C–C–N–C–C–N–C–C
- C–C–S–C–C + N–C–C–N 46
- S–C_8
- C_8 + S 934
- **●Cyclocondensation (intramolecular)**
- **General, N →C**
- *O*-(2-Alkenyl)-cycloalkanone Oximes, Thermal Cyclization 222
- Aminoalcohols + Triphenylphosphine/Tetrachloromethane/Amines 105
- **General, C →C**
- 2,5-Alkadienoic Esters, Thermal Cyclization 291
- ω-Haloalkyl Ketones + Base 554 (5528)
- ω-Olefinic 1-Nitroaldehyde Hydrazones + Base 380
- **Azlactone Formation**
- α-(*N*-acylamino)-carboxylic Acids + Carbodiimides 231
- **N–C–N–C_n, General**
- *N*-(ω-Ammonioalkyl)-α-halo-*N*-heterocyclic Compounds + Base 581
- **C–C–C**
- 3-Bromopropylsilanes + $AlCl_3$ 784
- **C–C–C–C**
- *o*-(Chloromethyl)-methylarenes, Thermal Cyclodehydrochlorination 427
- **N–N–N–C–C**
- *vic*-Hydrazonooximino Compounds, Cyclodehydration 977
- **O–N–C–C–N**
- *vic*- Dioximes, Dehydration 977
- **O–C–N–N–C**
- *N*-Acylhydrazonic Esters, Thermal Cyclization 946
- **N–N–C–C–C**
- 2-Azidobenzamides + Thionyl Chloride 308

- N–C–N–C–C
- *N*-Alkyldiaminomethaniminium Salts + Base 215
- 7,8-Anellation to Purine Derivatives 581
- O–C–S–C–C
- 2-Oxoalkyl Dithiocarbamates + Dimethyl Sulfate 182
- S–C–N–C–C
- 3-Alkylthio-2-azapropeniminium Salts + Base 215
- S–C–S–C–C
- 2-Oxoalkyl Dithiocarboxylates + Sulfuric Acid 183
- N–C–C–C–C
- 3-Aminoalkeniminium Salts + Base 214
- S–C–C–C–C
- 3-Alkylthio-3-aminopropeniminium Salts + Base 214
- C–C–C–C–C
- 1-Alkene-3,6-diones + Base 187
- 3-Aryl-2-alkeniminium Phosphorodichloridates, Thermal Cyclization 254
- 2,5-Dioxoalkanes + Base 553 (5526)
- 3-Hydroxy-1-(1-hydroxycycloalkyl)-1-alkynes + Acid 836
- Tertiary 3-Alkenols + Acid 77 (5385)
- N–N–C–C–C–C
- 1,2,4-Triketone 1-Arylhydrazones, Cyclodehydration 791
- N–C–N–C–C–C
- 7,8-Anellation of Purine Derivatives 581
- N–C–C–N–C–C
- 1-(*o*-Acylaminoaryl)-pyrroles + Phosphoryl Chloride 587
- N–C–C–C–C–C
- *o*-Acetylaminobenzaldehydes, Cyclodehydration 759 (5596)
- *N*-(2-Phenylethyl)-carboxamides + PCl_5 195
- O–C–C–C–C–C
- 2-Amino-1-alkenyl *o*-Hydroxyaryl Ketones + Halogen 901
- Enolizable 1,5-Diketones + Acid 437, 808
- 3-(*o*-Hydroxyaryl)-2-alkenoic Acids or Esters + Acid 904, 906
- C–C–C–C–C–C
- 2-Alkoxy-3-carboxy-3-(2-phenylethyl)-1,4-cyclohexadienes + Acid 374
- 4-Aryl-2-alkenenitriles, Thermal Cyclization 291
- 5-Aryl-2-alkylthio-1(or 2)-alkenes + Acid 915 (5622)
- N–N–C–C–C–C–C
- 1-Nitroaldehyde *N*-(*o*-Vinylaryl)-hydrazones + Base 380
- N–C–N–C–C–C–C
- 7,8-Anellation of Purine Derivatives 581
- **Cyclodehydrogenation (intermolecular)**
- O–C–C–C–C
- Phenols + Silver Carbonate 412
- O–C–C–N–C–C
- 2-Aminophenol + Silver Carbonate 412
- **Cyclodehydrogenation (intramolecular)**
- General, C → O
- Diols + Silver(I) Compounds 407
- N–N–C–N–C
- Aldehyde Semicarbazones + Iron(III) Chloride 53
- O–C–N–N–C
- Ketone Semicarbazones + Lead(IV) Acetate 154 (5403)
- S–C–N–C–C
- Electrochemical Cyclodehydration of Suitably Substituted Thiocarboxamides 590
- N–C–C–C–C
- 1-Benzoylindoles + Palladium(II) Salts 151
- O–C–C–C–C
- 2,3-Alkadienols + Silver(I) Salts 743
- 1,4-Diols + Chromium(IV) Compounds 608
- O–C–C–C–C–C
- 3,4-Alkadienols + Silver(I) Salts 743
- C–C–C–C–C–C
- 5-Alkenols + Chromium(VI) Compounds 318 (5464)
- 1-Benzylisoquinoline Derivatives + Oxidizing Agents 749 (5569)
- **Cyclopropanation**
- Alkenes 5, 425
- Alkylidenemalodinitriles 751 (5574)
- 2-Cyano-2-alkenoic Esters 751 (5574)
- x,y-Dideoxy-y,x-didehydromonosaccharides 198
- **Cyclopropenation** 625 (5546)
- **Dakin-West Reaction** 755 (5585)
- **Deacylation**
- *N*-Acyl Derivatives
- by Base 542, 551, 580
- **Deacyloxylation**
- Acyloxyalkanes
- with Base 880
- Acyloxyalkenes
- Thermal or Catalytic Deacyloxylation 474 (5503), 994 (5643)
- **Dealkoxycarbonylation**
- Thermal or Catalytic Dealkoxycarbonylation 481
- *N*-Alkoxycarbonyl Derivatives
- with Hydrogen Bromide/Acetic Acid 985
- **Dealkoxylation**
- Quinone Bis-acetals 604
- **Dealkylation**
- Alkylarenes
- by Transalkylation 49, 922–925, 928–936, 988
- with Phosphoric Acid 603
- *N*-Alkyl Compounds
- with Sodium/Ammonia 728
- **Dealkylselenylation** 233 (5424), 287
- **Dealkylsulfenylation** 839 (5611)
- **Deaminocarbonylation** 794
- **Dearyloxylation**
- *C*-Aryloxy Compounds 474 (5503)
- **Dearylselenylation** 77 (5387), 78 (5390), 233 (5424), 237 (5437), 487
- **Dearylsulfenylation** 836 (5604), 837 (5605), 914 (5621)
- **Debromination**
- Bis[*vic*-dibromo]-alkanes
- by Electrochemical Reduction 964
- *vic*-Dibromocyclopropanes
- with Chromium(II) Compounds 5
- **Decarboxylation**
- *vic*-Dicarboxylic Acids
- Oxidative Decarboxylation 118
- Lactones
- Thermal or Catalytic Decarboxylation 388
- **Decarbonylation**
- α-Hydroxycarboxylic Acids 157 (5413)
- **Decarboxylation-Dehydration** 388
- **Dechlorination**
- *vic*-Dichloroalkanes
- with Chromium(II) Compounds 5
- *N*-Heterocyclic *vic*-Dichloro Compounds
- with Zinc 580
- **Decyanation**
- α-Aminonitriles 716
- Arenecarbonitriles 291
- **Dehydration**
- Aldoximes
- with Carboxylic Anhydrides/Base 56
- with Chlorosulfonyl Isocyanate 227
- 2-Alkenols
- with Sulfenyl Chlorides 475 (5507)
- Alkylhydroxylamines
- with 2-Fluoropyridinium Salts/Amines 751 (5575), 760 (5599)
- Carboxamides
- with Chlorosulfonyl Isocyanate 227
- 3-Hydroxyalkanoic Acids
- with Carboxylic Anhydrides 266
- Tertiary Alcohols
- with Iron(III) Chloride on Silica Gel 314 (5451)
- Thermal or Catalytic Dehydration 942
- **Dehydroalkoxylation**
- 3-Alkoxyalkanoic Esters 914 (5620)
- **Dehydroamination**
- *N*-Heterocyclic *C*-Amino Compounds 305
- **Dehydrobromination**
- Bromoalkenes Type C=C–C–Br
- with Base 507
- 2-Bromoalkyl Ethers
- with Base 688
- *vic*-Dibromoalkanes
- with Base 994 (5641)
- **Dehydrochlorination**
- Chloroalkenes Type C=C–Cl
- with Base 534
- 2-Chloroalkyl Ethers
- with Base 688
- Cyclization of *o*-(Chloromethyl)-methylarenes
- Thermal Dehydrochlorination 427
- *gem*-Dichloroalkanes
- with Base 503
- **Dehydrocyanation**
- by Base 127
- **Dehydroiodination**
- *vic*-Diiodoalkanes
- with Base 994 (5641)
- **Dehydrosilylation** 158 (5415), 398 (5491)
- **Dehydroxylation**
- *vic*-Dihydroxyalkanes 469, 813
- Monosaccharides 951
- **Demercuration**
- Alkylmercury Acetals
- Reductive Demercuration 891
- Alkylmercury Halides
- Reductive Demercuration 891, 897
- **Demyanov Reaction** 333
- **Denitrosation**
- *N*-Nitroso Compounds
- Reductive Denitrosation 423
- **Deoxygenation**
- Epoxides
- with Methyltriphenoxyphosphonium Iodide 315 (5454)
- *N*-Oxides

see also: Reduction

- with Trifluoroacetic Anhydride 511
- Sulfoxides
- with Iodotrimethylsilane 61
- with Sodium Iodide/Acyl Halides 58
- with *N*-Sulfinobetaines 984
- with *N*-Sulfopyridinium Betaine 984
- **Desilylation**
- Enol Silyl Ethers
- Oxidative Desilylation 736
- Alcoholytic Desilylation 919 (5634)
- Hydrolytic Desilylation 192, 438
- with Acids or Lewis Acids 447, 779
- with Hydrogen Iodide or Iodine/Water 767, 769
- **Desulfonylation**
- Cyclic Sulfones
- Thermal or Catalytic Desulfonylation 118, 934
- *N*-Sulfonyl Compounds
- Hydrolytic Desulfonylation 289
- with Naphthalene-Sodium 980
- **Desulfurization**
- Disulfides (Sulfide Contraction)
- with Polymeric P–N Compounds 1000 (5660)
- ***C*-Deuteration**
- by Metal/D Exchange with D_2O 431, 797
- Replacement of Halogen 529, 928
- Replacement of Si-Functions 767
- **Diazo-Group Transfer**
- 2-Oxoalkylidenephosphoranes + 2-Azido-1,3-benzothiazolium Salts 803

● *C*-(1,1-Dichloroalkylation)
- Replacement of Halogen 503
● Diels-Alder Reactions
- catalyzed by Perfluorinated Resinsulfonic Acids 270
- Intramolecular Diels-Alder Reactions of Non-Linear Trienes 333
- under High Pressure 41, 42
- with Fulvenes 516
- with Fumaroyl Chloride 117
- with Quinones 149
- with Cyclopentadienones 854
- with 2-Pyrones 854, 987
- with Vinylketene Acetals 75 (5381), 76 (5383)
● *C*-(1,1-Dihalo-2-alkenylation) 77 (5385)
● Dimerization
- Alkynes 313 (5449)
● *C,N*-Dimetallation
- Replacement of Hydrogen by Lithium 589
● *C*-(1,3-Dithianylation)
- Reductive 1,3-Dithianylation of 1-Alkenyl Ketones 917 (5627)
- Replacement of Halogen 994 (5642)
- Replacement of Hydrogen 753 (5580), 839 (5612)
- Replacement of O-Functions 994 (5642)
● Double-Bond Shifts
- Alkenyl Ketones
- via Acetalization – Acetal Cleavage 626 (5549)
- 1-Aryl-1-alkenes and Hetero Analogs
- via Metallation-Hydrolysis 192
- Conjugated Dienes
- Thermal or Catalytic Isomerization 265
● Duff Reaction 166

● Enantiomeric Enrichment
- Amino Acids and Derivatives 630 (5560)
● Epoxidation
- Alkenes
- with Hydrogen Peroxide 399 (5494)
- 1-Alkenylsilanes
- with Organic Peroxoic Acids 395 (5478)
● Ester Cleavage
- Carboxylic Esters
- Cleavage with Alkyl- or Arylthiolate Ion 516
- Hydrolytic Cleavage 904
- Methylthiomethyl Carboxylates
- Two-Stage Cleavage 999 (5657)
- Silyl Phosphates
- Cleavage with Amines + Alcohols 191
● Esterification
- Carboxylic Acids (and Salts)
- with Alcohols or Phenols 355, 394 (5475), 429, 479 (5519) (5521), 491, 755 (5586), 757 (5590)
- with *O*-Alkyl- and *O*-Arylisoureas 561 (review)
- with Alkyl- and Arylpyridinium Salts 999 (5656)
- with Alkyl Halides 558 (5538), 956, 958, 961
- with Aryl Halides 558 (5538)
- with Aryl Selenocyanates 480 (5523)
- with Aryl Thiocyanates 480 (5523)
- with Chlorodimethylsulfonium Salts 1000 (5659)
- with Diazoalkanes 532
- with Thiols 394 (5475), 479 (5519), 999 (5655)
- with Trialkyloxonium Salts 1000 (5658)
- with Trialkylsulfonium Hydroxides 920 (5636)
- Carboxylic Acids via Reactive Acid Derivatives
- with Alcohols 24
- Dicarboxylic Acid Anhydrides
- with Alcohols 608
- Phosphoric Esters
- with *O*-Alkylisoureas 565
- Sulfonic Acids
- with Diazoalkanes 532
● Ether Cleavage
- 2-Alkoxy-1,4-dienes 185
- Enol Ethers 611
- Glycerol Ethers 939
● Etherification
- Alcohols + Alkyl Halides 428
- Alcohols + Dialkyl Sulfates 428
- Alcohols + Dimethyl Sulfoxide 398 (5489)
- Alkoxides + Alkyl Halides 203
- Diols + Alkyl Halides 123
- Diols + Dialkyl Sulfates 123
- Phenoxides + Alkyl Halides 203
● Exchange of Hetero Atoms
- O/N Exchange
- in Heterocyclic Rings 79 (5394), 437, 587, 808, 993 (5638), 995 (5644), 999 (5656)
- O/S Exchange
- in Ester Carbonyl Groups 396 (5482)
- in Ketones 941
- S/N Exchange
- in Heterocyclic Rings 470
- S/O Exchange
- in Thioxo-*N*-heterocyclic Compounds 288
- S/Se Exchange
- in Heterocyclic Rings 979
- Sn/As Exchange
- in Heterocyclic Rings 871

● Favorskii-Type Rearrangements 898
● *C*-Fluorination
- Indirect Replacement of N-Functions 993 (5638)
- Replacement of Other Halogens 53
● *Si*-Fluorination
- Replacement of O-Functions 473 (5500)
● *C*-Formylation
- Indirect *o*-Formylation of Phenols 839 (5612)
- Indirect Replacement of Hydrogen 753 (5580)
- Reductive Formylation of C=C Groups 557 (5534)
- Replacement of Halogen 165
- Replacement of Hydrogen 99, 166, 708, 709, 799
- Replacement of Hydrogen via Metallation 904, 906
- Replacement of N-Functions 45, 165
- Replacement of Si-Functions 768
● Fragmentation Reactions (C–C Cleavage)
- 2-Acyl-3-cyclohexenones
- by Base 185
- Adamantanes
- Reductive Cleavage 6
- Alkenediamides
- Reductive Cleavage 68
- Alkenes
- Oxidative Cleavage 209, 917 (5628), 942
- Alkenoic Esters
- Oxidative Cleavage 139
- Alkyl 2-Oxocycloalkanecarboxylates
- Photochemical Cleavage 279
- *gem*-Dihalocyclopropanes
- Reductive Cleavage 5
- Epoxycyclohexane Derivatives
- Oxidative Cleavage 154 (5403)
- α-Hydroxyketone *S,S*-Acetals
- Oxidative Cleavage 919 (5632)
- α-Hydroxyketoximes
- by Base 479 (5520)
- *vic*-Hydroxy-phenylthioalkanes
- Oxidative Cleavage 758 (5593)
- Tertiary Alcohols
- Oxidative Cleavage 409
- Tricyclic Diels-Alder Adducts
- Thermal or Catalytic Cleavage 608
● Friedel-Crafts Reactions
- with Acyl Halides 861

● *C*-Heteroarylation
- Replacement of Halogen 477 (5511)
● Hofmann Elimination of Quaternary Aminium Compounds 554 (5527)
● Hydration
- Alkenes
- Indirect Hydration 784
- Nitriles
- Oxidative Hydration 302
● Hydroalumination
- Alkenes
- with Complex Aluminum Hydrides 473 (5499), 475 (5506)
- Alkynes
- with Trialkylalanes 501 [cf. 1035]
- Non-conjugated Dienes
- with Complex Aluminum Hydrides 758 (5594)
● Hydroboration
- Alkenes
- with Secondary Boranes 701
- Vinyloxiranes
- with Borane (Diborane) 62
● Hydrobromination
- C≡C Groups 399 (5492)
● Hydrochlorination
- C≡C Groups 399 (5492)
● Hydrodebromination
- with Chromium(II) Compounds 4
- Bromoalkanes
- with Complex Aluminum Hydrides 75 (5379)
- with Trialkylstannanes 472
- Bromoarenes
- by Transbromination 926
- with Sodium Formate 475 (5505)
- with Zinc/Protic Systems 926
- α-Bromoketones
- with Metal Iodides/*N*-Sulfo- or *N*-Sulfinobetaines 60
● Hydrodechlorination
- with Chromium(II) Compounds 4
- Acyl Chlorides
- with Complex Borohydrides 477 (5512)
- Chloroalkanes
- with Complex Aluminum Hydrides 75 (5379)
- with Trialkylstannanes 472
- α-Chloroketones
- with Metal Iodides/*N*-Sulfo- or *N*-Sulfinobetaines 60
- Chloromethylarenes
- with Complex Aluminum Hydrides 929, 931
- 2,2-Dichloroalkanesulfonamides
- with Hexamethylphosphorous Triamide 462
- *gem*-Dichloro Compounds
- with Trialkylstannanes 838 (5610)
- with Zinc/Protic Systems 838 (5610)
● Hydrodefluorination
- Fluoroalkanes
- with Complex Aluminum Hydrides 75 (5379)
● Hydrodeiodination
- with Chromium(II) Compounds 4
- Iodoalkanes
- with Complex Aluminum Hydrides 75 (5379)
- Iodoarenes
- with Zinc/Protic Systems 927
● Hydroiodination
- C≡C Groups 399 (5492)
● Hydrosilylation
- Alkenes 236 (5435)
● *C*-(1-Hydroxyalkylation)
- Reductive 1-Hydroxyalkylation of C=C Groups 997 (5650)
- Replacement of Hydrogen 464, 824
- Replacement of Hydrogen via Metallation 388, 630 (5561)

● *C*-(2-Hydroxyalkylation)
- Allylic Replacement of Si-Functions 447
- Replacement of Metal Substituents 837 (5606)
● *C*-Hydroxycarbonylation
- Replacement of Metals 757 (5591), 862
● *C*-Hydroxylation
- Replacement of Hydrogen (Oxidative Hydroxylation) 239 (5444), 536
- Replacement of N-Functions 627 (5551)
- Replacement of S-Functions 922
● *C*-Hydroxymethylation
- Indirect Replacement of Halogen 476 (5510)
- Replacement of B-Functions 701
- Replacement of Hydrogen 319 (5466)
- Replacement of N-Functions 45
● Hydroxynitrosation
- Alkenes 155 (5407)
● Hydroxysulfenylation
- Alkenes 758 (5593)

● Insertion Reactions
see also: Ring-Enlargement Reactions
- C-Hal Bonds
- C_2 Insertion 622
● *C*-Iodination
- Deacylative α-Iodination of Enol Acylates 154 (5404)
- Replacement of Hydrogen 272, 932
- Replacement of Metal Substituents 501
- Indirect Replacement of N-Functions 995 (5644)
- Replacement of *O*-Functions 379, 740
- Replacement of Other Halogens 952
- Replacement of Si-Functions 393 (5473), 763, 767, 781, 856
- *Si*-Iodination
- involving Si-Si Cleavage 740
● Iodolactonization 400 (5497)

● Lactonization
- Bromolactonization of Norbornenacetic Acids 990
- Hydroxyalkanoic Acids + Acid 160 (5422)
- Hydroxyalkanoic Acids + Dimethylformamide Dineopentyl Acetal 80 (5397)
- Long-Chain ω-Hydroxycarboxylic Acids 759 (5597)

● Mercuration
- Acetoxymercuration of Alkenes 891, 990
- Halomercuration 891, 897
● *C*-Metallation
- Introduction of Lithium
- Replacement of Hydrogen 296, 610, 903, 906
- Replacement of S-Functions 757 (5591)
● *C*-Methylenation
- Indirect Replacement of Hydrogen 914 (5620)
- Replacement of Acyl Groups + H 750 (5570), 840 (5616)
- Replacement of Hydrogen 473 (5498), 474 (5501)
● *C*-Methylthiomethylation
- Replacement of Hydrogen 632 (5565)
● Michael Addition 107, 310, 311, 495, 672
● Michaelis-Arbuzov Reaction 615

● Nazarov Cyclization 835 (5600)
● Nef Reaction 420, 497
● *C*-Nitration
- Aromatic CH Groups
- with Graphite Nitrate 492
- with Nitric Acid or Nitric Acid Mixtures 49, 857
● *C*-Nitromethylation
- Reductive Nitromethylation of Aldehydic Carbonyl Groups 838 (5609)
- Reductive Nitromethylation of Carboxylic Ester Groups 295

● *C*-Nitrosation
- Replacement of Hydrogen 102, 857
● *N*-Nitrosation
- involving C–N Cleavage 207
- Replacement of Hydrogen 100
● *C*-Nitryloxylation
- Replacement of Halogen 54

● Oxidation
- Electrochemical Oxidation
- *N*-Aryl-thiocarboxamides 590
- Dialkylmalonic Acids 998 (5653)
- Primary Alcohols 514
- with Alkyl Hydroperoxides
- 2-Alkenenitriles 302
- 2-Alkenylsilanes 399 (5493)
- Selenoethers 233 (5424), 237 (5437)
- with Alkyl Hydroperoxides/Osmium(VIII) Oxide
- Alkenes 316 (5456)
- with Alkyl Hypochlorites
- Sulfenamides 98
- with Barium Manganate
- Alcohols 75 (5380)
- with Bromine/Aqueous Base
- Oximes 113
- Sulfonylhydrazones 113
- Thioethers 39
- with Carbenium Salts
- Enol Silyl Ethers 736
- with Cerium(IV) Compounds
- Hydroquinone Ethers 521
- with Chloral
- Secondary Alcohols 486
- with Chromium(VI) Compounds
- 2-Alkenols 415
- 5-Alkenols 318 (5464)
- 3-Aminoalkanols 913 (5618)
- Bromoalkanes 996 (5649)
- Chloroalkanes 996 (5649)
- 1,4-Diols 608
- Primary Alcohols 134, 157 (5412), 356, 421, 815
- Secondary Alcohols 157 (5412), 356, 395 (5478), 421, 815
- Trialkyl Borates 703
- with Dimethyl Sulfoxide
- Cyclohexane-1,3-diols containing a 1,3-Dithiane Groups 526
- Indoles 276
- Primary Alcohols 478 (5517)
- Secondary Alcohols 478 (5517)
- with Dinitrogen Tetroxide
- Thiols 320 (5470)
- with Graphite Nitrate
- Primary and Secondary Alcohols 492
- with *N*-Halosuccinimides
- Alkyl Silyl Ethers 158 (5416)
- Fused Dihydropyrroles 353
- Sulfenamides 97
- with Hydrogen Peroxide
- Alkenes 399 (5494)
- Benzenes 536
- 4-Oxo-2-thioxo-1,2,3,4-tetrahydropyrimidines 288
- Thioethers 934, 999 (5657)
- with Hypoiodites *in situ*
- Acetylfurans and Acetylthiophenes 868
- with Ketones
- Dihydroarenes 233 (5425)
- with Lead(IV) Carboxylates
- α-Aminocarboxylic Acids 558 (5537)
- Cycloaliphatic *vic*-Dicarboxylic Acids 118
- 1,2-Cyclobutanediol Monosilyl Ethers 997 (5650)
- 2-Decalones or Their Enol Ethers 898
- α-Hydroxyketone *S,S*-Acetals 919 (5632)
- Ketoximes 125
- with Manganese(IV) Compounds
- Primary Alcohols 492, 889
- Secondary Alcohols 492, 708, 807
- with Molybdenum Peroxide
- Ketone Enolates 78 (5389)
- α-Lithiocarboxylic Esters 239 (5444)
- with Organic Peroxoic Acids
- 1-Alkenylsilanes 395 (5478)
- *O*-Alkyllactols 157 (5411)
- Bicyclic Ketones 50
- 1,4-Dihydronaphthalene-1,4-imines 693
- Organopentafluorosilicates 236 (5435)
- Primary Amines 838 (5608)
- 2-Siloxy-1,3-alkadienes 156 (5408)
- Tertiary Amines 511
- Thioethers 835 (5601)
- with Osmium(VIII) Oxide
- Alkenediamides 68
- Alkynes 557 (5535)
- Furans 557 (5535)
- with Oxygen or Air
- 2-Alkenylsilanes 399 (5493)
- Furans 383
- 2-(Hydroxyalkyl)-furans 369
- Nitronate Salts 238 (5441)
- with Ozone
- Alkanes having Tertiary C-Atoms 419
- Primary Amines 419
- Selenoethers 233 (5424)
- with Periodate/Osmium(VIII) Oxide
- Alkenoic Esters 139
- 2-Alkenyl Ethers 203
- with Periodic Acid or Periodates
- Aryl 2-Bromoalkyl Selenides 78 (5390)
- 2,4-Dihalophenols 206
- with Permanganate
- *S,S*-Acetals 240 (5445)
- Alkenes 520, 942
- Primary Alcohols 495
- Secondary Alcohols 495
- with Potassium Superoxide
- *N*-Chloroamines 238 (5440)
- with Quinones
- Enol Silyl Ethers 237 (5438), 736
- Ethylarenes 145
- Methylarenes 144
- with Selenium Dioxide
- Acetylfurans and Acetylthiophenes 868
- with Silver(I) Compounds
- 2-Bromocycloalkanols 410
- Diols 407, 496
- Diphenols 411
- Ketone Hydrazones 413
- Phenols 412
- Primary Alcohols 402
- Secondary Alcohols 402
- with Silver(II) Compounds
- Hydroquinone Ethers 521
- with Thallium(III) Compounds
- *S,S*-Acetals 631 (5563)
- Alkenes 494
- Alkyl Aryl Ketones 494
● Oxidative Coupling
- *C–C* Coupling
- 1-Alkenylmercury Halides + $CuCl_2$ 313 (5449)
- Alkylidenephosphoranes + Hydrogen Peroxide 240 (5447)
- *N–N* Coupling
- Anilines + Silver Carbonate 413
- *S–S* Coupling
- Thiols + Bromodimethylsulfonium Bromide 721
● Oxidative Decarboxylation
- α-Aminocarboxylic Acids 558 (5537)
● Oxidative Hydrolysis
see: Cleavage of Functional Groups
● Oxidative Rearrangements
- Alkenes and Alkyl Aryl Ketones
- with Thallium(III) Compounds 494
● *C*-(2-Oxoalkylation)
- Replacement of Hydrogen via Metallation 553 (5526)
● *C*-(3-Oxoalkylation)
- Allylic Replacement of Si-Functions 447

● **Ozonization**
- Alkenes 917 (5628)

● **Peptide Coupling**
- **Activated Acids + H_2N–**
- –CO–O–N=C< + H_2N– 726
- **COOH + H_2N–**
- using Dicyclohexylcarbodiimide 466
- using *N*-Hydroxysuccinimide + Alkyl Isocyanides 187

● **Pfitzner-Moffatt Reaction** 526
see also: Oxidation with Dimethyl Sulfoxide

● ***C*-Phosphination**
- Replacement of O-Functions 351

● ***C*-Phosphonation**
- Replacement of Metal Substituents 859
- Replacement of N-Functions 452, 454

● ***C*-Phosphonylation**
- Additive Phosphonylation of *N*-Acylheteroarenium Salts 55
- Replacement of Metal Substituents 859

● **Phosphorylation**
- Nucleosides 137

● **Positional Protective Groups**
- in the Synthesis of Aromatic Compounds 921 (review)

● **Protection of Functional Groups**
- **Alcoholic –OH**
- by Acetal Formation 478 (5516)
- by *t*-Butoxymethylation 556 (5532)
- by *O*-(Methylthiomethylation) 398 (5489)
- by 2-Tetrahydropyranylation 618
- **Alcoholic –OH in Diols**
- by Cyclic Acetal Formation 134
- by 2-Tetrahydropyranylation 134
- **C=C**
- by Bromination 964, 966
- by Silylation 398 (5491)
- **–COOH**
- as 4-Carboxymethylphenacyl Esters 956
- as Methylthiomethyl Esters 1000 (5659)
- **–NH_2**
- by Diacylation 835 (5601), 840 (5614)
- **OH in Sugar Derivatives**
- by 4-Methoxy-2-tetrahydropyranylation 599
- **Phenolic –OH**
- by Acylation 839 (5613)
- by *t*-Butoxymethylation 556 (5532)
- by 2-Tetrahydropyranylation 618

● **Protective Groups, Cleavage**
- **–*COOH*-Protecting Groups**
- 1,3-Benzoxathioles as Masked Esters 223
- Methylthiomethyl Ester Groups 999 (5657)
- **OH-Protecting Groups**
- *t*-Butoxymethyl Group 556 (5532)
- 4-Methoxybenzyl Group 556 (5533)
- Tetrahydropyranyl Group 599, 620

● **Quaternization of Amino Compounds** 511, 554 (5527)

● **Reduction**
- **Catalytic Hydrogenation with Elemental Hydrogen in Heterogeneous Phase**
- 3-Alkenal Acetals 132
- 2-Alkenoic Acids and Esters 904
- 2-Alkenolides 370
- 3-(1-Alkynyl)-cycloalkenes 114
- 2-Arylazo-2,3-dihydrofurans 791
- 1,4-Cyclohexanedione Bis-acetals 604
- Cyclohexenones 987
- Diaryldiazenes 869
- Diglyceride Ethers 939
- Hydrazines 423
- Nitroarenes 587
- Quinone Bis-acetals 604
- **Catalytic Hydrogenation with Elemental Hydrogen in Homogeneous Phase**
- 2-Amino-2-alkenoic Acids 352
- **Electrochemical Reduction**
- Bis[*vic*-dibromo]-alkanes 964
- **with Alcohols**
- Aldehydes 484
- **with 1,3,2-Benzodioxaborole**
- Tosylhydrazones 995 (5645)
- **with Borane-Pyridine**
- Oximes 76 (5384)
- **with Chromium(II) Reagents**
- Alkenes 2
- Alkynes 2
- Arenediazonium Salts 18
- *N*-Aryl-2-alkenimidoyl Chlorides 7
- *N*-Chlorocarboxamides 7
- *C*-Halo Compounds 4
- 1,1,1-Triarylthioalkanes 20, 754 (5583)
- **with Complex Aluminum Hydrides**
- Alkenes 75 (5379)
- Alkyl Sulfonates 209
- 2-Alkynenitriles 431
- 1-Aminocycloalkanecarbonitriles 716
- Aryl *N,N*-Dialkylcarbamates 156 (5409)
- Aryl Diarylmethyl Sulfides 837 (5605)
- 1-Cyanoalkyl Acetals 478 (5516)
- Dicarboxylic Esters 351
- Epoxides 395 (5478)
- *N*-Nitrosoamines 423
- **with Complex Borohydrides**
- *O,O*-Acetals 393 (5474)
- *O,S*-Acetals 398 (5489)
- 3-Acyl-2-alkoxy-1,4-cyclohexadienes 185
- Acyl Chlorides 477 (5512), 912
- 2-Amino-1-alkenyl Ketones 913 (5618)
- 1,3-Benzothiazolium Salts 159 (5418)
- Chromonecarboxylic Esters 889
- 2-Cycloalkenones 628 (5554)
- Dicarboxylic Acid Anhydrides 608
- 4,4-Dihalo-2-alkenoyl Chlorides 266
- 3,4-Dihydroisoquinolines 195
- Glycosyloxyphosphonium Salts 951
- *o*-Hydroxybenzylammonium Salts 995 (5646)
- *N*-Hydroxymethylcarboxamides 319 (5466)
- Ketones 484, 629 (5557)
- Ketone Sulfonylhydrazones 614, 789
- Methylthiomethyl Ethers 398 (5489)
- 5-Nitro-1,3-alkadienyl Ketones 153 (5401)
- Organomercury Halides and Acetates 891, 897
- Pyridinium Salts 282
- Thiocarboxylic *S*-Esters 238 (5439)
- **with Dialkylalanes**
- Thiocarboxylic *S*-Esters 238 (5439)
- **with Diazene**
- Furan Peroxides 383
- **with Hexacarbonylmolybdenum**
- Carboxylic Acids + Nitroarenes 17
- **with Iodotrimethylsilane**
- Sulfoxides 61
- **with Iron(II) Compounds**
- *C*-Diazo-*N*-heterocyclic Compounds 194
- **with Lithium/Alcohol/Ammonia or Amines**
- 1-Aryl-2,4-alkadienols 698
- **with Lithium/Ammonia or Amines**
- Alkenes 465
- Arenes 465
- Ketone *S,S*-Acetals 614
- **with Magnesium Hydride/Copper(I) Reagents**
- Alkynes 155 (5405)
- **with Metal Carbonyls or Carbonylmetallates**
- 1-Bromoalkyl Sulfoxides 19
- Nitroarenes 17
- Oxiranes 11
- **with Metal Iodides/Acyl Halides**
- Sulfoxides 58
- **with Molybdenum(III) Compounds**
- Dialkyl Sulfoxides 19
- **with Potassium-Graphite/Protic Systems**
- Alkenes 31
- Alkenoic Acids 30
- 1-Alkenyl Ketones 30
- Imines 30
- Ketones 490
- **with Propane-1,3-dithiol**
- Azido Compounds 751 (5573)
- **with Sodium/Alcohols/Ammonia or Amines**
- 3-(1-Alkynyl)-cycloalkenes 114
- **with Titanium(0) *in situ***
- Aryl Dialkyl Phosphates 626 (5548)
- **with Titanium(II) Reagents**
- Acetals 14
- α-Acetoxyketoximes 14
- 2-Bromoalkanols 5
- Epoxides 10
- **with Titanium(III) Salts**
- 2-Alkene-1,4-diones 3
- Diazenes 18
- *C*-Diazo-*N*-heterocyclic Compounds 194
- Nitroalkanes 15
- **with Trialkylboranes**
- Aldehydes 236 (5434)
- **with Trialkylsilanes**
- Aldehydes and Ketones 77 (5386)
- **with Trialkylstannanes**
- Haloalkanes 471
- Halocyclobutenediones 361
- **with Triarylstannanes**
- *Se,Se*-Acetals 77 (5387)
- Selenoethers 77 (5387)
- **with Tungsten Species of Low Oxidation State**
- Epoxides 11
- **with Vanadium(II) Compounds**
- Azidoarenes 18
- **with Zinc/Protic Systems**
- Alkyl Sulfonates 836 (5602)
- *N*-Protected Amino Acid 4-(Phenacyloxycarbonylmethyl)-benzyl Esters 956

● **Reduction-Dehydration**
- Primary Nitroalkanes 36

● **Reductive Coupling**
- ***C–C* Coupling**
- Acetals + Titanium(II) Reagents 14
- Alcohols + Titanium(II) Reagents 10
- 2-Alkenals + Chromium(II) Reagents 11
- Carbenium Ions + Reducing Agents 8
- Carboxylic Acids + Titanium(II) Reagents 13
- Ketones + Ketones + Titanium(0) *in situ* 12
- ***C–N* Coupling**
- Carboxylic Acids + Nitroarenes + Hexacarbonylmolybdenum 17

● **Reductive Cyclization (intramolecular)**
- **General (C → N)**
- 2-Nitrobiphenyls + Trialkyl Phosphite 49
- Nitro-oxo Compounds + Phosphorus(III) Compounds 220
- **C–C–C**
- 9α-Bromo-3-oxo-Δ^4-steroids + Cr(II) 7
- 1,3-Diiodoalkanes + Cr(II) 6
- **N–C–C–C–C**
- 2-Nitrobiphenyls + Trialkyl Phosphite 935
- **O–C–C–N–C–C**
- *o*-Nitroaryl Phenacyl Ethers + Sodium Hypophosphate 220

● **Retro Diels-Alder Reactions** 608

● **Retro-Pinacol Reaction** 333

● **Reverse Dieckmann Reaction** 518

● **Ring-Contraction Reactions**
- **Elimination of C to give C_5**
- 2-Bromo-3-hydroxysteroids + Silver Carbonate 410
- Cyclohexenes + Thallium(III) Nitrate 494
- 2-Decalones or Their Enol Ethers + Lead(IV) Acetate/BF_3 + Alcohols 898
- **Elimination of C to give C_6**
- 4,5-Diamino-*o*-benzoquinones + Hydrochloric Acid 696
- **Elimination of S to give C_8**
- by Sulfone Contraction 934
- **Elimination of S to give S–C_n**
- Cyclic Disulfides or Thiosulfonates + Polymeric N–P^{III} Reagents 1000 (5660)

● **Ring-Enlargement Reactions**
- **C-Insertion to give C_6**
- 1-Acetyl-1-hydroxycyclopentane Derivatives + Lewis Acids 315 (5453)
- Cyclopentanones + 1,1-Dibromoalkyllithium 969
- **C-Insertion to give S–C–C–N–C–C**
- 2-Iodomethyl-1,3-thiazolium Salts + Base 272
- **N-Insertion, General**
- Cycloalkanones + Hydroxylamine-*O*-sulfonic Acid + Formic Acid 537
- **S-Insertion to give S–C–N–C–C**
- 2-Oxo-4-thioxoazetidines, Rearrangement 415
● **Ritter Reaction**
- with Alcohols 549
- with Enolizable Ketones 116
● **Robinson Anellation**
- of Heterocyclic *C*-Dialkylamino Compounds 122

● ***C*-Silylation**
- Reductive Silylation of Arenes 759 (5595), 843
- Reductive Silylation of C=C Groups 398 (5491)
- Reductive Silylmethylation of Ester Groups 919 (5634)
- Replacement of Halogen 398 (5490), 842, 845
- Replacement of Halogen via Metallation 769
- Replacement of Hydrogen 395 (5479), 842
- Replacement of Metal Substituents 845, 863
- Replacement of N-Functions 395 (5478)
- Replacement of O-Functions 844
- Replacement of S-Functions 320 (5471)
● ***O*-Silylation**
- Replacement of C-Groups 740
- Replacement of Enolic Hydrogen 34, 480 (5524), 505, 632 (5566), 730, 736, 836 (5604), 914 (5621)
- Replacement of Hydrogen 379, 599
● ***S*-Silylation**
- Replacement of Enethiolic Hydrogen 455
● ***Se*-Silylation**
- Replacement of Eneselenolic Hydrogen 455
● **Sommelet Reaction** 164
● **Spin Labelling**
- Amino Acids and Derivatives 530
- Carbamic Acid Derivatives 269
- Nucleosides and Nucleotides 267
● **Stereoisomerization**
- ***cis/trans* Isomerization of Olefinic Compounds**
- Photochemical Isomerization 399 (5492)
- **Epimerization**
- Thermal or Catalytic Epimerization 334
● ***C* Sulfonation**
- Replacement of Hydrogen 699
● ***N*-Sulfonation** 699
● ***O*-Sulfonation** 699
● ***C*-Sulfonylation**
- Replacement of Halogen 445, 733
- Replacement of Hydrogen 856
- Replacement of Si-Functions 768, 781, 856, 921
● ***N*-Sulfonylation**
- Replacement of Hydrogen 80 (5396), 136
● ***O*-Sulfonylation** 209, 351, 438, 822
● ***C*-Sulfonyloxylation**
- Replacement of Halogen 54
- Replacement of Hydrogen 382
● ***C*-Sulfurization**
- Replacement of Halogen 248

● ***C*-Thiolation**
- Replacement of Halogen 248
- Replacement of N-Functions 632 (5564)
● **Transacetalization**
- Aldehyde and Ketone Acetals 351
- Amide Acetals 154 (5402)
● **Transalkylation**
see also: Dealkylation
- Arenes + Alkylarenes 921–936, 988
● **Transesterification**
- **Carbamic Esters**
- with Halotrialkylsilanes 236 (5433)
- **Carboxylic Esters**
- with Aluminum Triphenylthiolate 757 (5592)
- with Triaryl Trithioborates 757 (5592)
- **Phosphoric Esters**
- with Halotrialkylsilanes 191
● **Transhalogenation** 926
● ***C*-(2,2,2-Trihaloethylation)**
- Replacement of Halogen 622

● **Ullmann Reaction** 933

● **Vilsmeier Reaction** 708, 799

● **Wittig Reaction, Wittig-Horner Reaction**
see: Carbonyl Olefination
● **Wurtz-Fittig Reaction**
- with Halosilanes 851

INDEX OF SPECIAL REAGENTS

● **Adogen 464®**
- Use as Phase-Transfer Catalyst 523
● **Aliquat 336®**
- Use as Phase-Transfer Catalyst 541
● **Aluminum Triisopropoxide**
- Use as Base 467
● **Amberlite IR 120**
- Use as Catalyst 219
● **Amberlyst 15**
- Use as Catalyst 620
● **Amberlyst A 26**
- Use 141
● **Amberlyst A-26 Benzenesulfinate**
- Preparation and Use 446
● **Amberlyst A-26 Nitrophenoxides**
- Preparation and Use 823
● **Amberlyst A-26 Tribromide**
- Preparation and Use as Brominating Agent 65
● **2-Amino-4,5-dihydro-1,3,2-dioxaphospholes (*N,N*-Disubstituted)**
- Use as Aminating Agents 718
● **ARSOP-bicyclo[2.2.1]heptadiene-rhodium(I)**
- Preparation and Use as Catalyst 351
● **2-Azido-3-ethyl-1,3-benzothiazolium Tetrafluoroborate**
- Use as Diazo-Group Transfer Agent 805
● **Benzeneselenyl Bromide**
- Use as Phenylselenylating Agent 754 (5584)
● **1,3,2-Benzodioxaborole**
- Use as Reducing Agent 995 (5645)
● **3-Benzyl-5-(2-hydroxyethyl)-4-methyl-1,3-thiazolium Chloride**
- Use as Catalyst 187
● **Bis[1,5-cyclooctadiene]-nickel(0)**
- Use as Catalyst 525
● **Bis[η-cyclopentadienyldinitrosylchromium]**
- Use as Reducing Agent 5
● **2,4-Bis[4-Methoxyphenyl]-2,4-dithioxo-P^V,P^V-1,3,2,4-dithiadiphosphetane**
- Use for O/S Exchange 941
● **3,6-Bis[trimethylsilyl]-1,4-cyclohexadiene**
- Preparation and Use as Source of Iodotrimethylsilane 759 (5595)
● **Bis[trimethylsilyl] Malonate**
- Use as Acetic Acid Synthon 787
● **Bis[triphenylphosphine]-copper(I) Borohydride**
- Use as Reducing Agent 477 (5512)
● **Bis[triphenylphosphine]-nickel Dichloride**
- Use as Catalyst 993 (5640)
● **9-Borabicyclo[3.3.1]nonane (9-BBN)**
- Use in Reduction Reactions 236 (5434)
● **Bromodimethylsulfonium Bromide**
- Preparation 720
- Use as Oxidizing Agent 721
- Use for *S,S*-Acetal Cleavage 720
● **Bromo-2,4-diphenyl-5-methylthio-1,2,4-triazolium Bromide**
- Use 478 (5515)
● **3-Bromo-2-methoxy-1-butene**
- Use as C_3 Synthon 553 (5526)
● ***N*-Bromosuccinimide**
- Use as Brominating Agent 507
- Use as Oxidizing Agent 158 (5416)
● **Bromotrimethylsilane**
- Use as Brominating Agent 749 (5567)
● ***t*-Butylchlorodimethylsilane**
- Use as Silylating Agent 395 (5479), 599
● ***t*-Butyl Chloromethyl Ether**
- Use for OH Protection 556 (5532)
● ***t*-Butyl Hypochlorite**
- Use as Chlorinating Agent 918 (5629)
- Use as Oxidizing Agent 98
● **Butyltriphenoxyphosphonium Bromide**
- Use as Condensing Agent 355

● **Celite**
- Use as Reagent Support 496
● **Chiral Reagents**

- **Chiral Additives in Asymmetric Synthesis**
- in Reduction Reactions 629 (5557)
- **Chiral Catalysts**
- Hydrogenation Catalysts 351
- **Chiral Crown Ethers**
- Preparation 458
- **Chiral Reaction Components in Asymmetric Synthesis**
- Amino Acids 110
- for Chiral Aminal Formation 837 (5607)
- **Chiral Reagents for Enantiomeric Enrichments of Racemic Compounds**
- for Amino Acids and Derivatives 630 (5560)

● **Chloral**
- Use as Oxidizing Agent 486

● **Chloramine T**
- Use in Aminohydroxylation of Alkenes 476 (5509)
- Use in Synthesis of Sulfone Diimines 289

● **2-Chloro-4-*t*-butylphenyl 2,2,2-Tribromoethyl Phosphorochloridate**
- Preparation and Use as Phosphorylating Agent 137

● **2-Chloro-1,3-diphenyl-6-methylpyridinium Tetrafluoroborate**
- Use as OH-Activating Agent 759 (5597)

● **2-Chloro-3-ethyl-1,3-benzoxazolium Tetrafluoroborate**
- Use as Decarbonylating-Dehydrating Agent 157 (5413)

● **5-Chloro-1-ethyl-2-methylimidazole**
- Use 137

● **Chloromethyl Methyl Ether**
- Preparation 970

● **Chloromethyl Phenyl Sulfide**
- Use as Phenylthiomethylating Agent 914 (5621)

● **2-Chloro-1-methylpyridinium Iodide**
- Use as Acid-OH Activating Agent 211

● ***N*-Chlorosuccinimide**
- Use as Chlorinating Agent 296, 399 (5492), 835 (5601)
- Use as Oxidizing Agent 97, 353

● **Chlorosulfonyl Isocyanate**
- Use as Dehydrating Agent 227

● **Chlorotrimethylsilane**
- Use as Chlorinating Agent 379
- Use as Silylating Agent 320 (5471), 395 (5478) (5479), 398 (5490), 736

● **Chromium(II) Acetate**
- Preparation 2

● **Chromium(II) Chloride**
- Preparation 1

● **Chromium(II) Ethylenediamine Perchlorate**
- Preparation 2

● **Chromium(II) Reagents**
- Use as Reducing Agents 1 (review)

● **Crown Ethers**
- Preparation 458
- Use as Phase-Transfer Agents 616, 617

● **Cumene Hydroperoxide**
see: 2-Phenyl-2-propyl Hydroperoxide

● **1-Cyanonaphthalene**
- Use as Photosensitizer 819

● **Cyanotrimethylsilane**
- Preparation 522, 523
- Use as Cyanating Agent 181, 204
- Use as Cyanating + Silylating Agent 747

● **Cyclopentadienylhydridovanadiumtricarbonylate Salts**
- Use as Reducing Agents 5

● **DBN (1,5-Diazabicyclo[4.3.0]-5-nonene)**
- Use as Base 554 (5527)

● **DBU (1,8-Diazabicyclo[5.4.0]-7-undecene)**
- Use as Base 139, 558 (5538)

● **Desulfurization Reagents**
- **Polymeric Desulfurization Reagents**
- Polymeric P^{III}-N Compounds 1000 (5660)

● **4,4-Dibromo-2-pentenal**
- Preparation 266

● **2,6-Di-*t*-butyl-4-methylpyridine**
- Use as Base 438

● **Dichloro-bis[η^5-cyclopentadienyl]-zirconium**
- Use as Catalyst 501 [cf. 1035]

● **2,3-Dichloro-5,6-dicyano-*p*-benzoquinone (DDQ)**
- Use as Oxidizing Agent 144, 737

● **Dicyclohexylcarbodiimide**
- Use as Dehydrating Agent 231
- Use in Esterification Reactions 24, 394 (5475)

● **1-Diethylamino-3-oxobutyne**
- Use as Dehydrating Agent 396 (5483)

● **Diethyl Phosphorocyanidate**
- Use as Cyanating Agent 716

● **2,2-Difluoro-1-tosyloxyvinyllithium**
- Preparation and Use as Glyoxylic Acid Synthon 918 (5631)

● **3,4-Dihydro-2*H*-pyran**
- Use for OH Protection 620

● **1,4-Dimethoxynaphthalene**
- Use as Photosensitizer 819

● **1,1-Dimethoxy-3-trimethylsiloxy-1,3-butadiene**
- Use as Diene in Diels-Alder Reactions 75 (5381), 76 (5383)

● **1-Dimethylamino-3-oxobutyne**
- Use as Dehydrating Agent 396 (5483)

● ***N*-(3-Dimethylaminopropyl)-*N'*-ethylcarbodiimide**
- Use as Dehydrating Agent 231

● **4-Dimethylaminopyridine**
- Use as Esterification Catalyst 394 (5475), 505

● ***N,N*-Dimethylchloromethaniminium Phosphorodichloridate**
- Use as Formylating Agent 799

● **4,6-Dimethyl-1-ethyl-2-fluoropyridinium Tetrafluoroborate**
- Use as OH-activating Agent 234 (5429), 750 (5571)

● **1,3-Dimethyl-2-fluoropyridinium Tosylate**
- Use as OH-activating Reagent 317 (5461)

● **Dimethylformamide**
- Use as C-Synthon 589
- Use as Formylating Agent 45, 557 (5534)

● **Dimethylformamide Dichloride**
- Use as Aminomethylenating Agent 376

● **Dimethylformamide Dimethyl Acetal**
- Use as Acetalization Reagent 154 (5402)
- Use as C-Synthon 901
- Use as C–N Synthon 553 (5525)

● **Dimethylformamide-Dimethyl Sulfate Adduct**
- Use in Acetalization 975

● **Dimethylformamide Dineopentyl Acetal**
- Use as Dehydrating Agent 80 (5397)

● **Dimethylmethylenesulfurane**
- Use as CH_2 Synthon 400 (5495)

● **Dimethylphenylsilyllithium**
- Use as Silylating Agent 398 (5491)

● ***N,N*-Dimethylphosphoroamidic Dichloride**
- Use as Condensing Agent 757 (5590), 999 (5655)

● **Dimethyl Sulfoxide**
- Use as Methylthiomethylating Agent 398 (5489)
- Use as Oxidizing Agent 276, 478 (5517), 526

● **2,4-Dinitrobenzenesulfenyl Chloride**
- Use as Dehydrating Agent 475 (5507)

● **1,4-Dioxan-Sulfur Trioxide Adduct**
- Preparation and Use 699

● **Diphenyl Carbonate**
- Use as Carbonyl Synthon 359

● ***N,N'*-Ditosylselenium Diimide**
- Use as Se Synthon 980

● ***N,N'*-Ditosylsulfur Diimide**
- Use as Tosylaminating Agent 980

● **1-Ethoxy-1-buten-3-yne**
- Use as Dienal Synthon 158 (5417)

● **1-Ethyl-2-fluoropyridinium Tetrafluoroborate**
- Use as OH-Activating Agent 393 (5472)

● ***N*-Ethyl-*N'*-(3-methylaminopropyl)-carbodiimide**
- Use as Condensing Agent 710

● **Fenchone**
- Use as Dehydrogenating Agent 233 (5425)

● **2-Fluoro-1-methylpyridinium Tosylate**
- Use as Dehydrating Agent 751 (5575), 760 (5599)
- Use as OH-Activating Reagent 317 (5461)

● **2-Fluoro-1,3,5-trinitrobenzene**
- Use as Condensing Agent 479 (5519)

● **Graphite**
- Use as Reagent Support 488, 493, 498

● **Graphite Nitrate**
- Use 492

● **Hexacarbonylchromium**
- Use as Catalyst for Double-Bond Shifts etc. 265

● **Hexacarbonylmolybdenum**
- Use as Reducing Agent 11, 17, 19

● **Hexachloroacetone**
- Use as Chlorinating Agent 913 (5617)

● **Hexamethyldisilazane**
- Use as Silylating Agent 476 (5510), 730
- Use of the Potassium Salt as Base 994 (5642)

● **Hexamethylenetetramine (Urotropine)**
- Use 161 (review)

● **Hexamethylguanidinium Chloride**
- Use as CN_3 Synthon 344

● **Hexamethylphosphorous Triamide**
- Use as Hydrodehalogenating Agent 462
- Use as Reducing Agent 36
- Use in Combination with CCl_4 951

● **HSP-C (High-Surface Potassium on Charcoal)**
- Use 493

● **HSS-A, HSS-C, HSS-G (High-Surface Sodium on Alumina, Charcoal, or Graphite, respectively)**
- Use 493

● **2-Hydroxypyridine (α-Pyridone)**
- Use as Carboxy-activating Agent 24

● ***N*-Hydroxysuccinimide**
- Use as Carboxy-Activating Agent 197

● **Iodotrimethylsilane**
- Generation *in situ* 759 (5595)
- Preparation 740
- Use as Silylating Agent 236 (5434), 730, 740

● **Kieselguhr**
- Use as Reagent Support 495

● **Lithium α-Benzyloxy-α-lithioacetate**
- Use as Acetic Acid Synthon 388

● **Lithium Diethylamide**
- Preparation and Use as Base 463

● **Lithium Diisopropylamide**
- Preparation and Use as Base 463

● **Lithium 2,2,6,6-Tetramethylpiperidide**
- Use as Base 320 (5469)

● **Magnesium Monoethyl Malonate**
- Use as Acetic Acid Synthon 239 (5442)

● **Meldrum Acid**
- Use as Acetic Acid Synthon 396 (5481)

● **Mercuric Oxide/Tetrafluoroboric Acid**
- Use as Mercurating Agent 962

● **Mesityloxy-tris[dimethylamino]phosphonium Azide**
- Preparation and Use 937

● **4-Methoxybenzenephosphonotrithioic Acid Anhydrosulfide**
- Use for O/S Exchange 396 (5482)
● **4-Methoxy-5,6-dihydro-2*H*-pyran**
- Use for Protection of OH Groups 599
● ***N*-Methylanilinium Trifluoroacetate**
- Use as Condensing Agent 473 (5498), 474 (5501)
● **9-(3-Methyl-2-butyl)-9-borabicyclo[3.3.1]-nonane**
- Use as Reducing Agent 236 (5434)
● **Methyl Methylthiomethyl Sulfoxide**
- Use as C-Synthon 880
● **Methyl 2-Nitrophenyl Disulfide**
- Use as Methylsulfenylating Agent 631 (5563)
● **1-Methyl-2-oxopyrrolidine (*N*-Methyl-pyrrolidone)**
- Use as Base 523, 524
● **Methyltriphenoxyphosphonium Iodide**
- Use in Deoxygenation Reactions 315 (5454)
● **Molecular Sieves**
- Use as Reagent Support 495
● **Montmorillonite**
- Use as Reagent Support 493, 498

● **Nafion H**
- Use as Solid Acidic Catalyst 270
● **Naphthalene-Lithium (Lithium Naphthalenide)**
- Use 310, 757 (5591)
● **Nazarov's Reagent (Methyl 5-Methoxy-3-oxopentanoate)**
- Preparation 622
● **Nitronium Trifluoroacetate**
- Use in Cleavage of *S,S*-Acetals 273
● **Nitrosonium Hexafluorophosphate**
- Use in Nitrile-Carboxamide Conversion 274
● **Nitrosonium Tetrafluoroborate**
- Use as Nitrosating Agent 100
● **Nitrosonium Trifluoroacetate**
- Use in Cleavage of *S,S*-Acetals 273
● **Nitrosyl Hydrogen Sulfate**
- Use as Nitrosating Agent 155 (5407)

● **Oxodiperoxymolybdenum-Pyridine-HMPT Complex**
- Use as Oxidizing Agent 78 (5389)

● **Pentafluorophenyl Acetate**
- Use as Acetylating Agent 916 (5624)
● **Phenyl Phosphorodichloridate**
- Use as Condensing Agent 757 (5590)
● **2-Phenyl-2-propyl Hydroperoxide**
- Use as Oxidizing Agent 302
● **Phenylselenotrimethylsilane**
- Preparation and Use as Phenylselenylating Agent 301
● **Polymer-Linked Aminium Salts**
- Use 445
● **Polymer-Linked Nitrophenoxides**
- Preparation and Use 823

● **Polymer-Supported Bromine**
see: Amberlyst A 26, Amberlyst A 26 Tribromide
● **Polyphosphoric Acid Ethyl Ester (PPE)**
- Use as Condensing Agent 428
● **Potassium Fencholate**
- Use as Deprotonating Agent 233 (5425)
● **Potassium Fluoride**
- Use for Carboxy-Group Activation 956
● **Potassium-Graphite**
- Use as Metallating Agent 493
- Use as Reducing Agent 30, 490
● **Potassium Triisopropoxyborohydride**
- Use 701
● **Pyridinium Chlorochromate**
- Use as Oxidizing Agent 318 (5464), 703, 704
● **Pyridinium Poly-Hydrogen Fluoride**
- Use 536
● **Pyridinium Tosylate**
- Use as Catalyst 724
● **4-Pyrrolidinopyridine**
- Use as Esterification Catalyst 755 (5586)

● **Singlet Oxygen**
- Use 383
● **Sodium Borohydride on Alumina**
- Use as Reducing Agent 912
● **Sodium Cyanoborohydride**
- Use as Reducing Agent 789
● **1-Succinimido-1,3-dithianium Chloride**
- Preparation and Use 839 (5612)
● ***N*-Sulfinotriethylammonium Betaine**
- Use 36, 60
● ***N*-Sulfinotrimethylammonium Betaine**
- Use 36, 60
● **1-Sulfopyridinium Betaine**
- Preparation 699
- Use 60, 984
● **Supported Reagents**
- Use in Organic Synthesis 401 + 481 (review), 444, 912

● **Tetrabromomethane**
- Use as Brominating Agent 627 (5550)
● **Tetrabutylammonium Chromate**
- Preparation and Use as Oxidizing Agent 357
● **Tetrabutylammonium Dichromate**
- Preparation and Use as Oxidizing Agent 996 (5649)
● **Tetrabutylphosphonium Iodide**
- Use as Catalyst 952
● **Tetrachloromethane**
- Use as Chlorinating Agent 462, 627 (5550)
● **Tetrakis[triphenylphosphine]nickel**
- Use as Catalyst 234 (5428)
● **Tetrakis[triphenylphosphine]palladium**
- Use as Catalyst 233 (5426), 234 (5428)
● **Tetramethylurea Dichloride (Tetramethylchloroformamidinium Chloride)**
- Preparation 340
- Use as CN_2 Synthon 339
● **Thallium(I) Cyanide**
- Use as Cyanating Agent 396 (5484)
● **4,4,4-Tribromo-2-butenal**
- Preparation 266
● **2,4,6-Tri-*t*-butylphenyl *N,N*-Dimethylcarbamate**
- Use as Reagent for Dimethylaminomethylation 156 (5409)
● **Trichloroborane**
- Use 99
● **4,4,4-Trichloro-2-butenal**
- Preparation 266
● **Triethyl Orthoformate**
- Use as Etherification Reagent 898
- Use as C-Synthon 690, 691
● **Triethyloxonium Tetrafluoroborate**
- Use as Ethylating Agent 1000 (5658)
● **Triflic Anhydride (Trifluoromethanesulfonic Anhydride)**
- Use as Sulfonyloxylating Agent 382, 438
● **Trifluoroacetic Anhydride**
- Use as Dehydrating Agent 56
- Use for *in situ* Formation of Acyl Trifluoroacetates 303
● **2,4,5-Triiodoimidazole**
- Preparation and Use 813
● **Trimethyloxonium Tetrafluoroborate**
- Use as Methylating Agent 1000 (5658)
● **Trimethylsilyl Azide**
- Generation *in situ* and Reactions 35
● **Trimethylsilyl Chlorosulfate**
- Use as Sulfonylating Agent 699
● **Trimethylsilyl Cyanide**
see: Cyanotrimethylsilane
● ***N*-Trimethylsilyliminotriphenylphosphorane**
- Use for Imine Formation 237 (5436)
● **Trimethylsulfonium Hydroxide**
- Preparation and Use as Methylating Agent 920 (5636)
● **1,3,5-Trioxan**
- Use as C-Synthon 473 (5498), 474 (5501)
● **Triphenylphosphine Dithiocyanate**
- Use as Aminothiocarbonyl Synthon 887
- Use as C–N Synthon in Cyclocondensations 121
● **Triphenylphosphine/Imidazole/Iodine**
- Use as Dehydroxylating Agent 469
● **Triphenyl Triselenoborate**
- Use 397 (5488)
● **Tris[2-hydroxyethyl]-amine ("Triethanolamine")**
- Use 627 (5552)
● **Tris[phenylseleno]-borane**
see: Triphenyl Triselenoborate
● **Tris[trimethylsiloxy]-ethylene**
- Preparation 476 (5510)
- Use as C_1 Synthon 476 (5510)
- Use as C_2 Synthon 27, 476 (5510)
● **Trityl Tetrafluoroborate**
- Use as Oxidizing Agent 736

INDEX OF APPARATUS, LABORATORY TECHNIQUES, ETC.

● **Electrochemical Methods**
- using nickel hydroxide electrodes 513
● **Electrolysis Cells**
- undivided cell with nickel hydroxide electrodes 515

● **Gas-Phase Chlorination Apparatus** 818

● **High-Pressure Syntheses**
- Diels-Alder reactions 41, 42

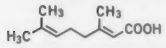
● **Phase-Transfer Catalysis**
- **Liquid/Liquid**
- *O*-Acylation with acyl halides in an aqueous-organic two-phase system containing quaternary aminium salts 821
- aldehydes + chloroform + ammonia in an aqueous-organic two-phase system containing quaternary aminium salts 26
- *O*-alkylation of anthrone with dimethyl sulfate in an aqueous-organic two-phase system containing quaternary aminium salts 177
- *C*-alkylation with alkyl halides in an aqueous-organic two-phase system containing quaternary aminium salts 461, 629 (5556)
- aminohydroxylation of alkenes with osmium(VIII) oxide/chloramine T in an aqueous-organic two-phase system containing quaternary aminium salts 476 (5509)
- Beckmann fragmentation of α-hydroxyketoximes in an aqueous-organic two-phase system containing quaternary aminium salts 479 (5520)
- carbonyl olefination with phosphonic esters in an aqueous-organic two-phase system containing quaternary aminium salts 884
- *C*-chlorination of alkanesulfonamides with tetrachloromethane in an aqueous-organic two-phase system containing quaternary aminium salts 462
- cleavage of alkenes with potassium permanganate in an aqueous-organic two-phase system containing quaternary phosphonium salts 942
- dehydrohalogenation of haloalkanes in an aqueous-organic two-phase system containing quaternary aminium salts 688
- esterification of carboxylic acids with alkyl halides in an aqueous-organic two-phase system containing quaternary aminium salts 957
- etherification of alcohols with alkyl halides in an aqueous-organic two-phase system containing quaternary aminium salts 458
- oxidation of alcohols with chromate ion in an aqueous-organic two-phase system containing quaternary aminium salts 134, 157 (5412)
- oxidative cleavage of oximes and tosylhydrazones with bromine/base in an aqueous-organic two-phase system 113
- reaction of alkyl halides with potassium *O*-alkyl dithiocarbonates in an aqueous-organic two-phase system containing quaternary aminium salts 178
- reductive demercuration in an aqueous-organic two-phase system containing quaternary aminium salts 891
- *O*-sulfonylation with sulfonyl chlorides in an aqueous-organic two-phase system containing quaternary aminium salts 822
- *N*-sulfonylation with sulfonyl chlorides in an aqueous-organic two-phase system containing quaternary aminium salts 136
- **Solid-Gas**
- halogen/iodine exchange in the gas phase using solid potassium iodide as iodine source and tetrabutylphosphonium iodide as catalyst 952
- **Solid-Liquid**
- *N*-acylation with acyl halides in organic solvents containing solid sodium hydroxide and quaternary aminium salts 387
- *C*-alkylation with alkyl halides in an organic solvent in the presence of solid sodium hydride and crown ethers 616
- *N*-alkylation with alkyl halides in an organic solvent in the presence of solid potassium hydroxide and crown ethers 617
- *N*-alkylation with alkyl halides in an organic solvent in the presence of solid sodium hydroxide and quaternary aminium salts 527, 551
- carbonyl olefination with phosphonic esters in an organic solvent containing solid potassium hydroxide 884
- cyclocondensation of *o*-aminophenols with 1,2-dihaloethanes in an organic solvent in the presence of solid sodium hydroxide and quaternary aminium salts 541
- dehydrohalogenation of alkyl halides in organic solvents using solid base and crown ethers 372
- etherification of diols with alkyl halides or dialkyl sulfates in a hydrocarbon containing sodium hydroxide 123
- Michael addition in an organic solvent in the presence of sodium or potassium carbonate and quaternary aminium salts 107
- reaction of chlorotrimethylsilane with solid sodium cyanide in *N*-methylpyrrolidone in the presence of Adogen 464® 523
- sulfones from alkyl halides and solid sodium sulfinates in organic solvents containing quaternary aminium salts 733

● **Piston Cylinder for High-Pressure Syntheses** 41

● **Two-Phase Reactions**
see also: Phase-Transfer Catalysis
- **Liquid-Liquid**
- oxidation of thioethers with bromine/aqueous base in an aqueous-organic two-phase system 39
- **Solid-Liquid**
- dehydrohalogenation of haloalkanes with solid alkali metal hydroxides in organic solvents 994 (5641)

Errata and Addenda 1979

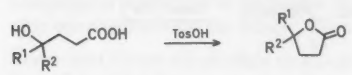
M. Contento, D. Savoia, C. Trombini, A. Umani-Ronchi, *Synthesis* **1979** (1), 30–32;
The structure for compound **3c** (p. 31, Table 1) should be:



A. Mignot, H. Moskowitz, M. Miocque, *Synthesis* **1979** (1), 52–53;
The correct name for Tetramisole® should be 6-phenyl-2,3,5,6-tetrahydroimidazolo[2,1-*b*]thiazole.

A. N. Pudovik, I. N. Konovalova, *Synthesis* **1979** (2), 81–96;
The first sentence of the experimental procedure on p. 96 should read as follows:
Dialkyl phosphite or phosphorothioate (0.01 mol) is added to the azo compound (0.01 mol) in ether (10 ml).
In Table 13 (p. 96) the entries R^2 for compounds **63b** and **63c** should be 4-H_3C—C_6H_4 and 4-O_2N—C_6H_4, respectively.

Abstract 5422, *Synthesis* **1979** (2), 160;
The formula scheme for the conversion **3**→**4** should be:



3 **4**

N. Blažević, D. Kolbah, B. Belin, V. Šunjić, F. Kajfež, *Synthesis* **1979** (3), 161–176;
Compounds **78a–e** (p. 173) should be named:
9-chloro-10b-phenyl-2,3,5,6-tetrahydro-10b*H*-[1,3]oxazolo[3,2-*c*]-quinazolines.

K. Herrmann, G. Simchen, *Synthesis* **1979** (3), 204–205
The lines 10 to 17 of the text (p. 204) should read as follows:
sche Acrylcyanide zugänglich[1,5,6]. Aliphatische Carbonsäure-halogenide hingegen setzen sich mit Tetraethylammoniumcyanid zu Acyloxymalodinitrilen („dimere Acrylcyanide") um, wofür auch die hohe Cyanidionen-Konzentration verantwortlich ist[1]. Die Reaktion aliphatischer Säurechloride **(2)** mit Cyanotrimethylsilan **(1)**[7–10] sollte deshalb eine geeignete Synthesenmethode für 2-Oxoalkannitrile (aliphatische Acrylcyanide, **3**) darstellen. Bisher konnte allerdings nur

L. Caglioti, F. Gasparrini, D. Misiti, G. Palmieri, *Synthesis* **1979** (3), 207–208;
The italic sub-headings in the Table (p. 208) should be *From tosylhydrazones, From* N-*methyl*-N-*tosylhydrazones,* and *From 2,4-dinitrophenylhydrazones.*

Abstract 5440, *Synthesis* **1979** (3), 238;
The formula scheme for the conversion **1**→**4** should be as follows:

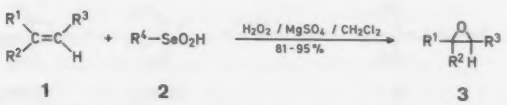
1 **2** **3**

R^1 = *i*-C_3H_7, *n*-C_4H_9, H_3C—CH_2—$CH(CH_3)$—, C_6H_5;
R^2 = H, CH_3;

C. Venturello, R. D'Aloisio, *Synthesis* **1979** (4), 283–287;
Entries 3 and 4 of the Mass spectrum column of Table 1 (p. 284) should be 284 (^{35}Cl) and 318 (^{35}Cl), respectively.

J. S. Davidson, *Synthesis* **1979** (5); 359–361;
Compounds **6** (p. 360) should be named:
3,4-diaryl-5-oxo-3,4-dihydro-1*H*-1,2,4-triazoles.

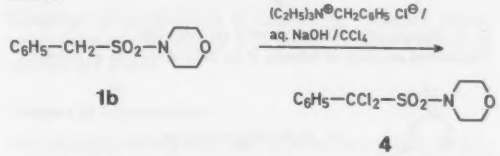
Abstracts 5494, *Synthesis* **1979** (5), 399;
The formula scheme for the conversion **1**→**3** should be as follows:



1 **2** **3**

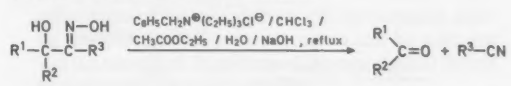
C. Skötsch, I. Kohlmeyer, E. Breitmaier, *Synthesis* **1979** (6), 449–452;
The name for compound **10a** should be:
3-Methyl-5,6,7,8-tetrahydroisoxazolo[5,4-*b*]chinolin.

J. Goliński, A. Jończyk, M. Mąkosza, *Synthesis* **1979** (6), 461–463;
The formula scheme for the conversion **1b**→**4** (p. 462) should be as follows:



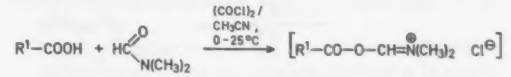
1b **4**

Abstract 5520, *Synthesis* **1979** (6), 479;
The formula scheme should be as follows:



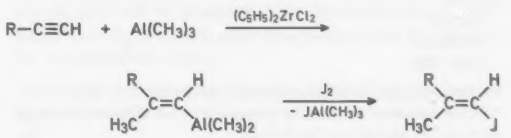
1 **2** **3**

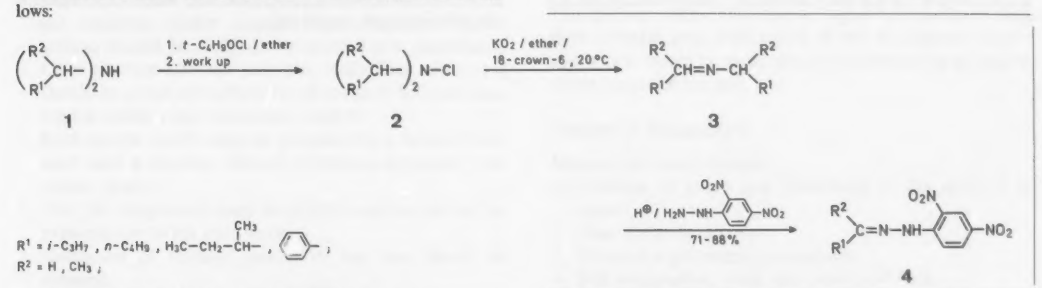
Abstract 5521, *Synthesis* **1979** (6), 479;
The formula scheme for the conversion **1**→**2** should be as follows:



1 **2**

E. Negishi, D. E. Van Horn, A. O. King, N. Okukado, *Synthesis* **1979** (7), 501–502;
For clarity, the following formula scheme should be added:



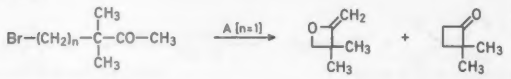


1 **2** **3** **4**

A. McKillop, D. W. Young, *Synthesis* **1979** (7), 481–500;
The heading for Table 24 (p. 496) should be:

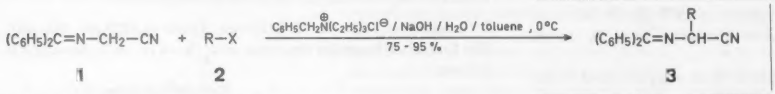
Table 24. Oxidation of Alcohols to Aldehydes and Ketones using Potassium Permanganate/Molecular Sieves[172].

Abstract 5528, *Synthesis* **1979** (7), 554;
The formula scheme for the conversion **7**→**9**+**10** should be as follows:



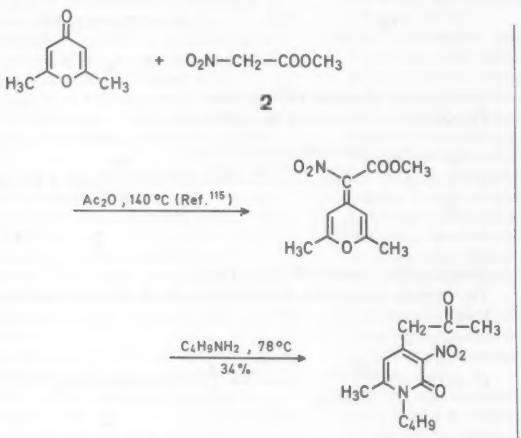
7 **9** (17%) **10** (10%)

Abstract 5556, *Synthesis* **1979** (8), 629;
The formula scheme for the conversion **1**+**2**→**3** should be as follows:



1 **2** **3**

M. T. Shipchandler, *Synthesis* **1979** (9), 666–686;
The second reaction in Scheme **P** (p. 682) should be as follows:

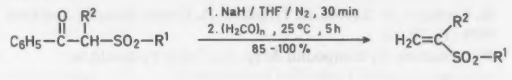


G. Sosnovsky, J. A. Krogh, S. G. Umhoefer, *Synthesis* **1979** (9), 722–724;
The heading for the third column of the Table (p. 723) should be as follows:

Solvent[c]
(Reaction
time[d] [h])

C. Venturello, R. D'Aloisio, *Synthesis* **1979** (10), 790–793;
The last two lines of the third paragraph of the right hand column on page 791 should read as follows:
drazines and of the not easily accessible 3-acetyl-5-methylisoxazole[4].

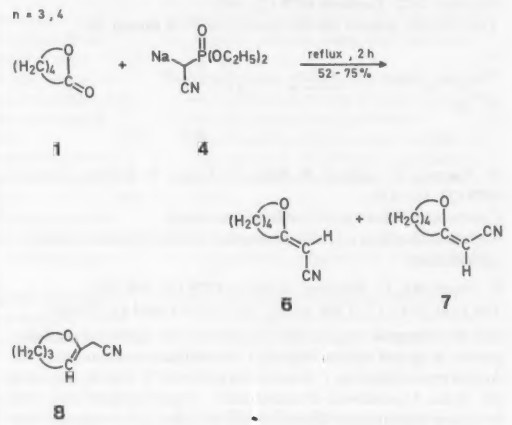
Abstract 5616, *Synthesis* **1979** (10), 840;
The formula scheme for the conversion **1**→**2** should be as follows:



1 **2**

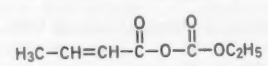
Abstract 5627, *Synthesis* **1979** (11), 917;
The title should be as follows:
[1,4]-Addition of 1,3-Dithianes to 2-Cycloalkenones.

Abstract 5637, *Synthesis* **1979** (11), 920;
The lower part of the formula scheme should be as follows:



1 **4** **6** **7** **8**

C. Goasdoue, R. Couffignal, *Synthesis* **1979** (12), 954–955;
The structure of compound **5** (p. 955) should be as follows:



5

P. Pollet, S. Gelin, *Synthesis* **1979** (12), 977–979;
The correct names for compounds **8** and **9** are 4-oxo-2-phenyl-2,6-dihydro-4*H*-furo[3,4-*d*]-1,2,3-triazoles and 4-oxo-4*H*,6*H*-furo[3,4-*c*][1,2,5]oxadiazoles, respectively.

SYNTHESIS International Journal of Methods in Synthetic Organic Chemistry 1979

Authors' Guidelines

I. Review Articles

Potential authors are asked to contact Prof. G. Schill or Prof. G. Sosnovsky before submitting a manuscript in order to avoid duplication of topics or exceptionally long delays in publication. For addresses see inside front cover of a current issue of SYNTHESIS.

Language of publication is English or, in exceptional cases after consultation with the Editors, German.

The subject matter which might be acceptable is almost unlimited provided that the emphasis is on practical methods in synthetic organic chemistry. The article should give either a complete description of the methods which have not been previously reviewed and/or a critical evaluation of new developments to known methods. The manuscript should be written in the style currently used in SYNTHESIS and should include as many up-to-date, key references as possible.

In addition to the directions given in Section III, the following points should be followed during the preparation of manuscripts for review articles:

1. The manuscript should not exceed 40 pages (DIN A4 or Quarto), including references, formulae, and tables, typed with double spacing (~15–20 printed pages). Longer articles may be accepted under exceptional circumstances; however, publication of such articles may be delayed until sufficient space becomes available.
2. The methods described must be illustrated by detailed descriptions of the experimental procedures involved. These examples should preferably be unpublished or be selected from less common sources.
3. Discussion of theory and mechanism should be limited to the minimum necessary for a clear understanding of the reactions under consideration. Historical background should be avoided or restricted to a minimum.
4. Clear reaction schemes (not only individual structures) should be given and tabulation of critically selected analogous results made whenever possible.
5. Each review article must be preceded by a table of contents and a concise abstract reflecting accurately the subject matter.
6. Only in exceptional cases should the author restrict the presentation to his own work.
7. Quotation of authors' names in the text should be avoided.
8. The material contained in previous review articles should be considered and repetitions avoided wherever possible.

No fees are paid to the authors of Reviews nor are page charges levied.

II. Communications

Language of publication is English or German; manuscripts should not exceed 6–8 pages in length; no page charges are levied.

Subject of Manuscripts

Manuscripts dealing with the following topics may be submitted for publication.

1. *New synthetic methods*
   Advantages of the new method over the presently existing methods for the same process should be indicated and the scope and limitations of the new method should be indicated by several examples.
2. *Significantly improved synthetic methods*
   Advantages of the new development over currently used methods should be clearly demonstrated by parallel experiments under similar conditions.
3. *New and/or significantly improved preparations of key substances*
   Potential applications of the key substances should be demonstrated clearly by literature citations or by practical examples.
4. *New classes of compounds.*

Manuscripts describing syntheses of *new* compounds by *known* methods will not be accepted. In addition, manuscripts may not be accepted if the reactions are only performed on an analytical scale and products are not isolated by a preparative means.

Manuscripts, the essential features of which have previously been published in preliminary form, will not be accepted.

The Editors reserve the right to reject manuscripts which they consider deal with topics of too specialised interest and which would be more suitably published in an appropriate specialist journal.

Content of Manuscripts

Manuscripts must contain:

1. Notation of scope and limitations of the method reported.
2. Clear formula schemes.
3. Detailed experimental procedures.
4. Full preparative, yield, and analytical data.
5. Demonstration of purity and identity of *all products* by suitable analytical methods (with notation of apparatus and conditions).
6. Microanalytical data for *all new compounds.* These data should be submitted separately but will not always be printed.

III. Preparation of Manuscripts for Reviews and Communications

1. The manuscript should be typed double spaced on DIN A4 or Quarto paper; indentations and underlinings should be avoided (except for complicated cases, as in sugar chemistry, where the type of script to be used may be indicated by underlining). In the case of manuscripts with more than one author, the author to whom correspondence is to be addressed should be indicated (*).

2. The style of articles currently published in SYNTHESIS should be followed; tables, procedures, spectral data, formula schemes, references, etc. When the preparation of a series of similar (e.g. homologous) compounds is described, a general procedure should be given and the data for the individual compounds presented in tabular form.

3. The nomenclature used should be based on the systematic rules adopted by *Chemical Abstracts* (Index Guide Vol. 76), *Ring Index* and *Supplements* (American Chemical Society, 1959–1965), IUPAC (*Nomenclature of Organic Chemistry,* Parts A, B & C, Pergamon Press, 1979) etc. Trivial names should be avoided unless they are definitely advantageous over the corresponding systematic names.

4. Whenever possible, clear formulae (reaction schemes are to be preferred to individual structures) should be given for the reaction described. Freehand drawings of organic structures are acceptable. However, it is emphasised that the presentation should be clearly and neatly carried out.

   The following abbreviations should be used in formula schemes:

A	Groups such as $-(CH_2)_n-$, $-C_6H_4-$, and hetero analogs
M	Metal
R	(preferentially) C-Substituents
X	Halogen, OR, NR_2, SR, etc. (monovalent)
Y	O, S, NH, etc. (bivalent)

   and the abbreviations used in peptide and sugar chemistry.

   Note: for iodine, the sign J is used, not I.

5. In the text, full chemical names should be used instead of formulae whenever possible (e.g. hydrogen chloride or hydrochloric acid, respectively, not HCl). In certain cases, however (e.g. complexes having complicated names) formulae will be accepted.

6. References should be placed collectively at the end of the review article or communication. They should be numbered consecutively. Subdivisions such as 3a, 3b should be avoided. It is requested that the references be checked carefully before the manuscript is submitted. In quotations with more than four authors, only the name of the first author is given with the addition "et al.". Journal abbreviations should be in accord with *Chemical Abstracts* practice (see *Bibliographic Guide for Editors and Authors,* American Chemical Society, 1974).

7. The use of footnotes referring to the text should be avoided if possible. Footnotes should be numbered consecutively with the references throughout the manuscript. Footnotes may be used for tables and should be designated as a, b, c, etc.

8. Acknowledgements may only be made for financial support, essential gifts of chemicals or apparatus, and performance of essential parts of the work (microanalyses, spectra, etc.) by other firms, institutions, etc. The acknowledgements should be kept as brief as possible and placed at the end of the manuscript. Similarly, dedications should be brief and placed at the end of the manuscript.

9. The internationally accepted system of units – "SI-units" – should be used wherever possible.

IV. Submission of Manuscripts

Manuscripts (3 copies are necessary) should be submitted to the editorial office or one of the three Editors. For addresses see inside front cover of a current issue of SYNTHESIS.

Upon receipt of the manuscript by the editorial office or the Editor, an acknowledgement postcard will be sent. The results of the referees' evaluation will usually follow within 6–8 weeks.

Communications which are accepted for publication will be published as rapidly as is technically possible. It is therefore of interest to readers and authors that all manuscripts be concise and in accord with the directions given here.

Manuscripts written in a language which is not the author's mother language will be checked carefully and corrected where necessary by the editorial staff; this may lead to some delay in publication.

V. Galley Proofs

Galley proofs will be sent to the authors for correction. They should be returned as soon as possible to the editorial office. Please note that the signs XXXXX, 00000, ▮▮▮▮▮▮▮, ????????, etc. indicate that something was missing or unintelligible in the manuscript and the pertinent information should be added during correction.

It is requested that corrections be limited to the elimination of printing errors. Alterations and expansions are to be avoided for reasons of increased costs. The proof sheets are not indicative of the quality of the print. This applies particularly to the lay-out of tables. Due to the particular mode of setting, the corrections of misspellings are expediently carried out at the same time as the author's corrections.

Fifty (50) reprints of each article will be supplied free of charge. These will be shipped after publication of the journal issue. An order form for further reprints (in increments of 50) will be sent with the galley proofs and should be signed and returned with the corrected proofs even when additional reprints are not required.